

**Changing social stereotypes: The impact of inconsistent information
on stereotypes of and affective reactions to target groups.**

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Abstract.

Previous literature has shown that negative stereotypes are susceptible to change under the right conditions. The reported research extended the literature on stereotype modification by investigating the effects of stereotype inconsistent information on both completely positive stereotypes and mixed stereotypes that contain positive and negative traits. The mixed stereotypes were included so that it would be possible to link the current research to Rothbart and Park's (1986) work that found individual positive traits easy to disconfirm and negative ones hard to disconfirm. The present research examined the effect of stereotype inconsistent information on positive and negative traits in the context of a stereotype. The effects of disconfirming behavioral information on congruent or incongruent affective reaction to the target groups was also considered. Reading times for the presented stereotype inconsistent information were also recorded. Sixty four students participated in the study, 32 participants were presented with stereotype inconsistent information and their results were compared to 32 control subjects who received no information. Both conditions filled out a behavioral and affective questionnaire. It was found that for positive stereotypes, positive traits were susceptible to modification but in the mixed stereotypes positive traits resisted modification whilst negative traits was modified. It was also found that an affective reaction that is congruent with the stereotype could be modified in response to disconfirming behavioral information. Reading times were longer for stereotype inconsistent information than consistent. Implications for stereotype change are discussed

1. Introduction

1.1 Stereotypes

Stereotype. Within a culture a set of widely shared generalisations about the psychological characteristics of a group or class of people. (Reber, 1995, p.754).

The above definition captures the modern, social psychological definition of a stereotype. Social psychologists have long debated the positive and negative consequences of stereotypes; the opinion of early researchers was that because of the way function they are a negative cognitive tool (e.g. Lippmann, 1922) which can distort reality. However stereotypes are important cognitive shortcuts that help the individual to function efficiently, and while they can be simplistic over generalisations (Reber, 1995), they usually capture some important characteristics of the group (Hamilton & Sherman, 1994).

It would not really be practical or even perhaps possible to treat everybody that the perceiver interacts with as separate and distinct individuals because the cognitive resources needed to do so would be enormous. Therefore it is useful to assign individuals to a category or social group as this allows the perceiver to access a large amount of general characteristics very quickly without much effort (Macrae, Milne & Bodenhausen, 1994). Therefore when a perceiver encounters another person that person is not viewed as an individual but rather as a member of a group (Hamilton & Sherman, 1994). In most cases the information known about the group will be reasonably or at least partially

accurate. However there will be occasions where the stereotype contains information that is wrong or unfair which is a problem with stereotypes and one of the main reasons they have been responsible for generating so much research.

When discussing stereotypes it is important to remember that despite some negative consequences they do serve a number of beneficial purposes. Stereotypes help to preserve spare cognitive capacity. If a stereotype is activated during impression formation it leaves more capacity for a second task and as such acts as an important time saving device (Macrae et al, 1994). If a stereotype is accurate it can be a very efficient part of the individual's cognitive repertoire and one that the social perceiver would find it difficult to do without. Each individual only has a limited amount of cognitive resources and yet has to cope with a huge amount of social stimulus that must be understood to successfully interact with the environment, categorising individuals into groups is one way of coping.

Stereotypes not only provide the perceiver with cognitive shortcuts they can also serve to help improve individuals self esteem. Social identity theory (Tajfel & Turner, 1979) argues that people's self esteem is partly influenced by their membership in social groups. By having a negative stereotype of an out-group (groups to which the individual does not belong) and making the in-group (a group to which the individual belongs) as psychologically different and as positive as possible it allows the individual to enhance their self-opinion by comparison (Abrams & Hogg, 1985). Individuals also tend to overestimate their own group's favorability to make the relative difference seem even

greater (Hamilton & Sherman, 1994). This process can of course result in prejudice, which is a negative attitude towards a group or individuals based on negative traits assumed to be uniformly displayed by all members of that group (Reber, 1995, p.590). Therefore the cause of prejudice may be to make the individual feel good about themselves rather than despising members of the groups to which they do not belong.

However it is not accurate to portray stereotypes as completely beneficial as they can have many negative consequences. The price paid for using stereotypes is that they contain very general information and therefore not specific or accurate to every member of the group, assuming the person has been assigned to the correct group. Stereotypes can have negative consequences for the holder of the stereotype as well as for those who are stereotyped. Firstly stereotypes can cause the holder to make decisions to be made on the basis of possibly incorrect or over generalised information. For individuals who belong to a stereotyped group the consequences can be worse still as they could be denied opportunities or subjected to prejudice because they are assumed to have negative characteristics thought to be associated with a group that they may belong to.

A common characteristic associated with Stereotypes is that they are unresponsive to change, this is true to an extent as the contents of stereotypes are protected by a variety of other defences. Once a stereotype is activated not only does the individual attend to stereotype confirming information they also view ambiguous information as being stereotype confirming. A study by Sagar and Schofield (1980) found that ambiguous behaviour performed by blacks was seen as more threatening than the same behaviour

performed by whites. Another way of protecting stereotypes is for the individual to assign stereotypic behaviour to personality whereas inconsistent behaviour is assigned to situational causes (Macrae & Shepard, 1989) making it invalid as evidence against the stereotype. In general individuals are more reluctant to integrate information that is inconsistent with their stereotype (Hamilton & Sherman, 1994). Perceivers also tend to overestimate the instances of stereotypic traits and find illusionary correlation's, which is where the individual thinks that two variables such as a social group and stereotypic traits are strongly associated with each other when the correlation is actually very weak or non-existent (Hamilton & Rose, 1980). There is also a tendency for any information that is contrary to existing beliefs not be integrated into memory, while supporting information is actively sought (Johnston, 1996). The perceiver also tends to remember information that is stereotype consistent because it is attended to and processed more deeply if the information supports the stereotype (Bodenhausen, 1988).

Once a stereotype is activated it may have very negative consequences for members of the stereotyped group as any contact from that point on may be biased by beliefs contained in the stereotype. The idea that the activation of a social stereotype may bias how subsequently encountered evidence is interpreted was tested in a study by Bodenhausen (1988). To determine if evidence that is stereotype consistent is more often incorporated into decision making Bodenhausen (1988) asked participants to act as members of a jury and examine evidence from a case. Jurors had to make a judgement about either a racially nondescript or Hispanic defendant. Hispanics were used because they had a negative social stereotype of being criminal and aggressive. The study found

that when participants were made aware that the defendant was Hispanic before they read any evidence they tended to give more attention and elaboration to stereotype confirming information whereas information that was stereotype disconfirming tended to be neglected. The tendency to attend to stereotype confirming information and overlook stereotype disconfirming evidence is one of the many cognitive defences that has to be overcome when attempting to modify a stereotype. The Bodenhausen (1988) example shows that not only do biases in interpretation protect stereotypes they can also have negative consequences for those perceived to be members of stereotyped groups.

Because of the many possible negative consequences of social stereotypes it is understandable why there has been so much research conducted on how to modify or change stereotypes. Understandably most research has been conducted on negative stereotypes because of its association with prejudice. Because positive stereotypes are not so blatantly linked with prejudice they are not examined to the same degree by researchers despite the fact they too can cause serious errors of judgement and are protected by the same cognitive mechanisms as their negative counterparts. Most importantly however it must be remembered that positive stereotypes like negative ones can lead to biased information processing (Johnston, Locke, Rattray & Giles, 1997).

The process of keeping beliefs alive is relatively simple and extremely effective. The person holding a positive belief believes that it is justified because they have a false sense of their own objectivity (Klein & Kunda, 1992). When questioning a positive belief, possibly in response to disconfirming information people search their memory for

information that supports their desired conclusions and as such are much more likely to access information that is consistent with that belief rather than contrary to it (Klein & Kunda, 1992). The individual thinks they are being objective but that objectivity is biased by the motivation to see their beliefs confirmed. This process is not limited only to positive stereotypes but it does show how easy it is for the individual to convince themselves that their beliefs are justified.

Very little research has been done on the area of positive stereotypes, perhaps because they are not seen to have the same level of social importance as potentially destructive negative stereotypes. Although they may not be so immediately apparent positive stereotypes can have negative consequences. Johnston et al. (1997) give the example that a positive stereotype of women is that they are warm and nurturing, however, this positive stereotype may have negative consequences for a woman if she was to apply for a job which demands the applicant to be ruthless. The negative consequence of positive stereotypes can affect people from the group which is positively stereotyped such as the Johnston et al. (1997) example, and for the holders of the stereotypes. The holder of a positive stereotype could suffer negative consequences if they wrongly attribute positive characteristics to someone because they belong to a positively stereotyped group.

A common example of a potentially damaging positive stereotype is that associated with physical attractiveness. Positive stereotypes of attractive people are extremely prevalent and can cause decisions to be made based purely on a person's appearance (Cash & Trimer 1984, and Romano & Bordieri 1989). A study by Romano and Bordieri (1989)

found that high school students' opinions of college professors were heavily influenced by the professors' attractiveness. Attractive professors were rated as being more likely to be better teachers, more likely to be recommended to other students and less likely to be blamed if a student failed their course than unattractive professors. A study with more disturbing results by Cash and Trimer (1984) found that attractiveness could enhance evaluations of ability. Two hundred and sixteen females read poor quality essays that were allegedly written by a male or female student who was either attractive, unattractive or unidentified. The attractive writers essays were rated as better than the unattractive writers were and the effects were generally found to be stronger for female writers than males. Both of these studies show that positive stereotypes can cause errors and biases in our thinking which has direct relevance to the current study which examines, in part, the modifying of positive stereotypes.

Society's positive stereotypes of attractive people for example, do not at first glance seem a serious problem but when the impact of the disadvantages it can cause others are examined it is obvious why consideration must also be given to modifying our positive as well as negative stereotypes. It is the intention of the present research to investigate positive stereotypes in an attempt to investigate whether the same process which have been shown in previous research to produce stereotype change in negative stereotypes also produce stereotype change of positive stereotypes.

As well as investigating positive stereotypes the present research will also use mixed stereotypes that have a positive and negative components. Most social stereotypes

probably have a mixture of positive and negative traits which individuals perceive as being characteristic of social groups. Therefore the present research will include mixed stereotypes because despite their likely prevalence they have not been investigated before. By using stereotypes that have incongruent traits it allows comparisons to be made about the confirmability and disconfirmability of positive and negative traits that are contained within the same stereotype, rather than considering them as individual traits or in the context of totally negative or totally positive stereotypes.

1.2 Stereotype change

Stereotype change may require deeper processing than stereotype preservation to override the cognitive defences which protect stereotypes. This reluctance to change or alter stereotypes is understandable and necessary, especially on the basis of one or maybe a few pieces of disconfirming information as often a great deal of what is perceived as confirming evidence has been collected over a period of time. Resistance to change is practical because the perceiver does not have the cognitive resources to alter their stereotypes in response to every piece of contradictory evidence. If stereotypes were altered too easily it would defeat the beneficial purposes they provide. Stereotypes are an important cognitive energy saving device. Using stereotypes allows cognitive resources to be freed up for more important or more taxing tasks (Macrae et al., 1994). The pressure or need to change is in most cases non-existent as interactions with others are often so trivial that they do not have the chance to provide the perceiver with any disconfirming information, this means that the formation of a complex impression is not

required (Macrae et al., 1994). Because of the benefit stereotypes provide the individual it not surprising that individual is biased towards maintaining them.

As discussed in the previous section stereotypes have a number of characteristics that make them resistant to disconfirming information. However under the right conditions it is possible to bring about stereotype change. A study by Johnston and Hewstone (1992) which examined the subtyping model found that stereotype change was most likely to occur when stereotype inconsistent information was dispersed across many group members rather concentrated within a few. It may be easier to initiate change with dispersed information rather than concentrated because concentrated disconfirming information is easy to subtype as it can be looked at as a one off or a freak occurrence which is not typical of the stereotyped group as a whole. Dispersed information leads to greater stereotype modification because the disconfirmers are much harder to dismiss or isolate. It appears that disconfirming information is best assimilated if the individual displaying the behaviour is only mildly disconfirming and in all other respects is extremely typical.

Subtyping is perhaps the most widely supported model of stereotype maintenance . Although subtyping is often discussed as a model for stereotype change (e.g. Weber & Croker 1983) it actually serves to protect stereotypes rather than change them and as such is in essence a model of stereotype maintenance. Proponents of the subtyping model argue that stereotypes have hierarchical structures that are created and modified with new experiences (Brewer, Dull & Lui, 1981). It may be that in most situations where

stereotypes are challenged the individual chooses to subtype the disconfirming information. This process saves the individual from having to alter their existing stereotype, by subtyping any disconfirming information as a one off or chance occurrence the event or group member becomes an exception, thus allowing the superordinate stereotype to still hold. Therefore subtyping is a very effective means of keeping stereotypes intact. However the subtyping model has a few complexities that must be discussed when examining stereotype change. In Hewstone's (1996) review of research of examining subtyping he notes stereotypes are a type of schema or a knowledge structure about a social group. Therefore it must be possible to alter or modify that schema by adding or removing information. Subtyping attempts to insulate the superordinate stereotype from change, and often prevents a broader stereotype from replacing the original. (Hewstone, 1996) this is done by developing very specific subtypes which represent exceptions for the purpose preserving the superordinate stereotype (Weber and Croker, 1983). While subtyping may be effective at preserving stereotypes the subtypes can occasionally become so strong that they will dilute the superordinate category (Hamilton & Sherman, 1994).

A study that provides an excellent example of subtyping was conducted by Hewstone, Hopkins and Routh (1992) where in an effort to improve school children's stereotype of police officers a liaison programme between a school and the police was set up. The study found that children liked the school police officer and rated him more positively than police in general but that view did not generalise to police as a whole. The school police officer was perceived as different from police officers in general and was therefore

subtyped allowing the pre-existing negative stereotype of police officers to remain. This study raises an important point relevant to the present research, the children subtyped the policeman because there was justification for them to do. The policeman in the study differed from the children's stereotype of police in general on many different levels so he was therefore atypical of police as a group. Kunda and Olenson (1995) argued that group exemplars can only be subtyped if there is justification, some reason why the disconfirmers can be considered as atypical of the group. The current research provides no justification for subtyping from the information provided which is only name and occupation, consequently it is predicted that there will be stereotype change in responses to the disconfirming information provided.

Crocker, Fiske and Taylor (1984) argue that there is two ways a schema can change either with increased experience of and exposure to a group (e.g. Contact hypothesis) or through exposure to incongruent information. The second possibility has been the focus that has generated a lot of research on the mechanisms of stereotype change. Three possibilities for the way in which stereotypes change in response to disconfirming information have been proposed, firstly the Book keeping model (Rothbart, 1981) which predicts gradual change in response to each piece of disconfirming evidence. Secondly the conversion model (Rothbart, 1981) which predicts dramatic change in response to extreme information, in this model change is seen as an all or none phenomenon. Thirdly, the subtyping model (Brewer et al, 1981) which is really a model which explains stereotype preservation as explained above. The large amounts of experimental literature conducted on stereotype change have shown consistent support that when stereotypes are

modified it is consistent with the prototype version of the subtyping model (Hewstone, 1996). Studies have shown change is caused by dispersed information (e.g. Johnston & Hewstone 1992; and Johnston, Hewstone, Pendry & Frankish, 1994;) such as a disconfirming group member who apart from the trait they are disconfirming is in all other respects consistent with a typical group member. Stereotypes are very unlikely to change if information is concentrated such as a group member who is extreme in their level of disconfirmation. In such a case the individual is subtyped because they are not seen as typical of the group. Although all three proposed models have received some support subtyping receives the most consistent and must be viewed as the realistic model. The most important lesson that can be learnt from this research is that any opportunity to allow the perceiver to subtype must be avoided to for stereotype modification to occur.

Although a lot of research has examined the process of changing or modifying a stereotype it is also important to examine the mechanisms that underlie stereotype change. Johnston and Coolen (1995) used two models that test persuasion and attitude change to examine how stereotype discrepant information is integrated into the existing stereotype. The individual processes new information via either the central or peripheral route. The central route is more thorough but requires more effort and decisions are made based on all available information. Central processing typically results in improved recall and lasting change in attitudes but it requires the processors to have the motivation and cognitive resources to process information in-depth. The peripheral route is based on mental shortcuts and used to form quick judgements. Information is not fully processed, the processor is insensitive to message quality and there is typically poor recall and short

lived attitude change. Johnston and Coolen (1995) found that when subjects were in the high involvement conditions, where the central route should be used to process information stereotype change was affected only by message cues, which is the content or information contained in the message. In the low involvement condition, where the peripheral route should be used to process information stereotype change was affected by message cue and if the message was presented by a highly credible source. These results show that stereotype disconfirming information is processed differently under high and low involvement conditions. Under high involvement, or when the individual is motivated to put effort into examining something they tend to rely solely on the content of the message or information they are receiving. However when the individual is not motivated to devote a lot of cognitive resources for a task other factors enter the equation to decide how a decision is made. Under low involvement the content of the message as well as who is delivering it affects how the message is processed.

It is likely that in many situations the individual is not highly motivated when processing information and will therefore rely on other factors such as their stereotype as well as the information provided in their message to make decisions. The extra effort needed for central route processing means that it takes more time to process information this way. Johnston and Hewstone (1992) showed that it also takes a longer amount of time to process information that is incongruent with schema than information that is congruent. The connection between these pieces of research is this; if central processing takes longer than peripheral processing and schema incongruent information takes longer to process than schema congruent information then it is possible that a longer amount of time is

spent processing schema incongruent information because it is being processed via the central route. Therefore subjects in the current research should spend longer reading the inconsistent information and those longer times should be caused by more in depth processing via the central route. Central processing typically results in improved memory and can change attitudes, it is therefore possible that central processing of stereotype inconsistent information could lead to stereotype change.

Longer reading times for stereotype disconfirming information has been demonstrated before by Brewer et al., (1981) and more recently by Johnston and Hewstone (1992) whose more in depth analysis of reading times actually found times were only longer for disconfirming information when it was dispersed. When the disconfirming information was concentrated the reading times were no longer than those for confirming information were. It is the prediction of this study that because participants are only provided with one piece of information about each group member participants will not be able to consider them extreme disconfirmers and will therefore warrant longer processing through the central route resulting in longer reading times. It is also the intention of this study to attempt to correlate reading times with stereotype change. This is an area that has not previously been addressed in the literature but is an important area that needs examination. It is important to know if longer reading times are occurring because the new information is being integrated into the stereotype or if perhaps there is another reason such as that suggested by Stern, Mars, Millar and Cole (1984) that increased processing times are because participants are attempting to explain away discrepancies raised by unexpected information. If there is a positive correlation between longer

reading times and stereotype change it will be evidence that deeper processing leads to integration of new information into the stereotype.

Whilst all stereotypes have a certain resistance to change research has been conducted to test the idea that some traits may be harder to change than others. Research by Rothbart and Park (1986) examined the confirmability and disconfirmability of 150 individual traits. One of their findings was that unfavourable or negative traits are easy to acquire whereas positive traits tend to be hard to acquire. Rothbart and Park (1986) also found that negative traits are hard to lose whereas positive traits are relatively easy to lose. Because stereotypes are a belief that a collection of traits are typical of a certain group, stereotypes should operate in much the same way as individual traits. Therefore although Rothbart and Park (1986) only tested individual traits and not in combination as stereotypes the present research will attempt to show that positive stereotypes should be easy to change because they contain positive traits which are easy to lose and the disconfirming evidence consists of negative traits which are easy to acquire. For the mixed stereotypes, which contain a mixture of positive and negative traits both will be disconfirmed. By disconfirming both the positive and negative traits it will show whether negative traits are harder to disconfirm when they are in the context of a stereotype and not individual. Disconfirming the mixed stereotype will also provide information as to whether the positive traits will respond differently to disconfirming evidence than they do in a totally positive stereotype which is also tested by the present research. Testing modification of stereotypes which contain incongruent information within the stereotype

has not been looked by past research it is important to if these mixed stereotypes will react in the same way as totally negative stereotypes which have been studied previously.

The idea that stereotypes can have different components such as negative and positive traits raises the point that there may be other components within or related to stereotypes that are worthy of investigation.. Most of the previous research on stereotype change has focused on changing cognitive beliefs about groups. Cognitive research has formed the basis of knowledge about stereotypes and is an extremely important avenue of information, but by itself it is not enough, it is only one piece of the puzzle. There are other related components, such as the affective reaction, which can also have an impact on inter-group relations. Reactions are not the same as beliefs and are therefore not part of the stereotype; they are however the first thoughts or feelings experienced in response to a stimulus. An affective reaction is the feeling an individual has towards (Bodenhausen, 1993) a group such as dislike, anxiety or distrust as opposed to our affectively based stereotype of a group which is based on how the individual thinks members of that group feel (Asuncion & Mackie, 1996).

Boedenhausen (1993) refers to the affective reaction as the integral affect, which he describes as the emotions or feelings that are elicited when the individual thinks about or is confronted by a member of a group or the context with which the group is associated. For out-groups the affect that is integral to them will often be negative. If the integral affect is negative the level of negativity will substantially increased if the individual is interacting with a member of an out-group rather than just thinking about them

(Bodenhausen, 1993). The consequences of the affective reaction are enormous because they can bias social interaction and cognitive processing (Hamilton & Sherman, 1994). Therefore a negative affective reaction may have as many negative consequences as negative stereotypes. Because the affective reaction is not part of the stereotype even if the stereotype is cognitively modified it is possible the individual could still retain their integral affect which is important because it is the first reaction to a group.

Allport (1954, p.328) said “Defeated intellectually, prejudice lingers emotionally”. This statement accurately reflects the problems that affective reactions can cause. Even if the stereotype has been successfully modified the affective reaction may have remained unaffected. The affective reaction is an important area requiring more research as it can influence the nature of cognitive processing which can in turn influence the course of social interaction. (Hamilton & Sherman, 1994). Stephan and Stephan (1984) argued that the affective reaction can influence social interaction by generating anxiety, leading to increased stereotyping, and avoidance of future interaction. The present research is going to consider the affective reaction in addition to changing beliefs about target groups as this is an important area of research that is currently under reported.

1.3 Congruent and incongruent stereotypes

Recent research has begun to focus on the idea that if different types of information have different amounts of impact on changing stereotypes then it is possible that stereotypes are made up of a combination of different components or that different stereotypes are based on different types of information. Recent research (Asuncion & Mackie, 1996) has

examined the possibility that two basic forms of stereotypes may exist, those that are based on behavioural information and those based on affective information. Behaviourally based stereotypes are based on actions and behaviour displayed by that group, for example the stereotype of emergency room doctors might be that they are extremely busy which is derived from their frantic behaviour and heavy work load. Alternatively, affectively based stereotypes are based on how individuals who belong to certain group are perceived to feel or think, for example a stereotype of psychological councillors may be that they are compassionate and understanding. Therefore it is possible there may be at least two distinct varieties of stereotypes that exist, and it may be that different types of disconfirming information have a different level of impact depending on the make up of the stereotype. Asuncion and Mackie's (1996) research focused on comparing which types of inconsistent information had the biggest impact on the participant's willingness to apply their stereotypes. They found that subjects were less willing to apply their stereotypes when the type of disconfirming evidence was most directly relevant to the nature of the target group (Asuncion & Mackie 1996). This means that if the stereotype is behaviourally based then disconfirming behavioural information will have the greatest impact on preventing stereotype use. The same effect was also found for affectively based stereotypes. However it is important to note that this effect was not as dramatic in the affective condition as it was for the behavioural condition.

Asuncion and Mackie (1996) demonstrated that affective stereotypes may be more resistant to change than behavioural stereotypes. Similarly Rothbart and Park (1986) demonstrated that individual positive traits were easy to lose whilst negative ones

resisted change. However, stereotypes are more complex than individual traits and because of that complexity there may not be such a clear distinction between what can be termed a positive or negative stereotype. In many cases the individual may not have a clear-cut positive or negative stereotype of a group. Many stereotypes include both positive and negative characteristics (Smith & Mackie, 1995). The present research is concerned with incongruence on two levels. Firstly incongruence that exists within the stereotype where the individual holds both negative and positive beliefs about and the same group. Secondly there is incongruence between the stereotype and the affective reaction, this can occur when a purely positive or negative stereotype has a affective reaction with opposite valence, or with a mixed positive/negative stereotype where the affective reaction will be in incongruent with some beliefs but congruent with others. Often an individual may have a predominantly positive stereotype towards a group but there may also be something about that group which makes the individual have negative feelings towards them. In such cases the stereotype is incongruent with the affective reaction because both contain information that seemingly contradicts one another. This incongruence may arise because the positive stereotype and negative feelings are based on different types of information concerning the same group. Perceivers may know on one level that a group's behaviour is positive and admirable but on a different level those same qualities may cause the individual to have a negative reaction. For example with racial stereotypes there may be some discrepancy between the individuals attitudes towards the same group (McConahay, 1983). For example a common positive stereotype of blacks may be that they are good musicians and good athletes (Devine, 1989), however this is contrasted with the negative feeling that participant in a number of studies tend to

associate feeling threatened by blacks (Sagar & Schofield, 1980). In Sagar and Schofield's (1980) study participants assigned no more negative traits to blacks than they did to whites showing that they did not have a more negative stereotype of blacks and yet they interpreted ambiguous behaviour by a black actor as more threatening than the same behaviour by white actor. This study provides evidence that the an affective reaction of whites which can be to feel threatened by blacks, which then biases future interactions despite being in contrast with their stereotype.

It is likely that in most cases there will be a congruent opinion about both a group's behaviour and feelings when encountering that group. However there will also be many instances where incongruence exists, The individual in attempt not to appear prejudice may have strong positive beliefs about a stereotyped group, such as blacks but still maintains a negative affective reaction when encountering the group. This same type of phenomenon will occur in many racial and other forms of stereotypes. In such situations it makes the task of altering stereotypes with disconfirming information more difficult because while it may be clear what type of information needs to be presented for change to occur within the stereotype the affective reaction may go unchanged. Therein lies the importance of stereotypes that are incongruent with affective reactions. They contain two different types of information with either type being able to be positive or negative, and by altering one component the other may not be affected. This means that the stereotype may not be effectively modified, even if the stereotype is changed but if the affective reaction remains untouched it may bias future interaction which may in turn cause the stereotype to revert back to its pre-modification form. Most research is carried out in

laboratory settings where even if the affective reaction is measured the level of negativity will be reduced because the participant is not in a real world situation. When the individual is back in the real world and is in a place where interaction commonly occurs or actually interacts with a member of a stereotyped group the negativity of the affective reaction will increase (Bodenhausen, 1993)

As well as incongruent stereotypes there are instances where the individual's beliefs and affective reactions are consistent or congruent, e.g. positive affective reaction and positive stereotype. It may be that congruent stereotypes are in some cases easier to modify because of the consistent valence of both types of information. It may be easier to change the affective reaction using behavioural information when it is congruent with the stereotype. This is because if stereotype inconsistent information is presented it will all be of the same valence. If inconsistent information is provided about positive stereotype with a positive affective reaction the information will be negative. Therefore all the inconsistent information the perceiver is receiving is in direct contrast to the affect reaction and the inconsistency is blatant. Incongruent stereotypes can however pose difficulties because as well stereotypes that are completely positive or completely negative being incongruent with the affective reaction it is also possible to have stereotypes which are mixed (positive and negative traits), such as those used in the current research. If the stereotype is mixed that means either the positive or negative traits will be inconsistent with the affective reaction depending on its valence. If inconsistent information is provided about the whole stereotype some of that information will still be consistent with the affective reaction making any attempt to alter the affective

reaction very difficult. The current research therefore predicts that behavioural information will be sufficient to change the affect reaction when it is congruent with the stereotype but not when the affective reaction is incongruent stereotypes.

The present research argues that the affective reaction toward a stereotyped group should not be ignored. As mentioned earlier the affective component of stereotypes has been examined previously, whereas the affective reaction, which can affect social judgements (Bodenhausen, 1993) and could be an important factor in biasing social interaction has to some extent been ignored by researchers. The current research will attempt to examine if the affective reaction can be modified through behavioural information. Therefore the current research will attempt to determine if the affective reaction will be modified simultaneously to the stereotype or whether it will resist behavioural modification. It is also hoped that by testing affective reactions that are both congruent and incongruent with the stereotype it will provide information about whether this factor effects their resistance to change.

1.4 The present research

Participants in the present study were randomly assigned to either the control or experimental condition. Those in the control condition were given two questionnaires to complete. The first asked them to rate how typical they thought behavioural traits were of members of certain occupational groups. The second questionnaire used a list of affective traits and asked subjects how accurately each trait described how members of the same occupational groups made them feel. Prior to completing the questionnaires participants

in the experimental condition were shown a series of sixteen pieces of information about members of four occupational groups of which two were regarded as congruent (positive stereotype positive affective reaction) and two that were incongruent (mixed positive/negative stereotype and negative affective reaction). Four pieces of information related to each group, of those two were stereotype inconsistent and two were stereotype consistent. All information was of a behavioural nature.

The present research makes a number of predictions about the effect that the presented behavioural information will have on participants' stereotypes. Firstly it is predicted that for congruent behavioural stereotypes, traits about which stereotype inconsistent information is presented will be rated as less characteristic of the group by experimental participants than by the control participants who received no information. It is predicted that there will be no effect across conditions for traits about which stereotype consistent information is provided to the experimental participants as this information is consistent with the pre-existing stereotype and will have a plateau effect (Johnston et al., 1994). For the incongruent behavioural stereotypes, which contain both negative and positive traits, it is predicted that when stereotype consistent information is provided about a positive trait there will be no difference in experimental participant's ratings relative to control participants. However it is predicted that when inconsistent information is provided about positive traits experimental participants will rate the trait as less characteristic of the group than control participants. It is also predicted that when inconsistent information is provided about a negative trait it will be rated as less characteristic of the group by the experimental subjects, however only minor change is

expected and the amount of change in participants ratings will not be as dramatic as the level predicted when inconsistent information is provided about positive traits. Finally it is predicted that when consistent information is provided about negative traits there will be no difference in experimental participants ratings relative control participants. These predictions are made based on Rothbart and John's (1986) findings that positive traits are easy to lose and negative ones are easy to acquire. Research has demonstrated that stereotypes containing negative traits can be changed, so the present research predicts the level of change will be greater when inconsistent information is given about positive traits than when inconsistent information is given about negative traits. In more general terms it is predicted that overall the positive traits which are disconfirmed will show greater level of change than negative traits which are disconfirmed and any traits that are confirmed will show no change

For the affective reaction it is predicted that when rating the congruent groups participants will be influenced by the negative information provided and their affective reaction will become less positive relative to control participants. However for the incongruent groups it is predicted that mixed positive and negative information provided to experimental participants will not have enough effect to alter their affective reaction relative to the control participants. This prediction is made on the basis that because the participants will not feel that their affective reaction is being very strongly challenged, as detailed earlier.

For both incongruent and congruent groups it is predicted that reading times for stereotype consistent behaviours will be shorter than the reading times for stereotype inconsistent (negative) behaviours as found by Brewer et al., (1981). There has been no conclusive evidence that increased reading times for stereotype inconsistent information leads to stereotype modification (Johnston & Hewstone, 1992), however research in this area is very limited. The present research hopes to find that participants have longer reading times for stereotype inconsistent information, if such a relationship is found it is hoped that a significant correlation can be found between reading times for stereotype inconsistent information and participant's ratings of stereotype traits. Therefore the present research predicts that the longer time spent processing the inconsistent information the greater the amount of stereotype change.

In conclusion it is the intention of the present study to show that behavioural information can alter affective reactions as well as changing the stereotype, this hypothesis will be testing using only positive and mixed positive/negative stereotypes. The current research also tests the predictions, derived from Rothbart and Park (1986) that the positive stereotypic traits will be easily disconfirmed and negative traits easily gained and hard to lose. The present research will also test for stereotype modification to investigate if there is a correlation between reading times for stereotype inconsistent information and stereotype modification.

Method.

2.1 Participants and design

Sixty four students volunteered to participate in the experiment. The experiment had a 2 (condition: control/experimental) x 2 (Group: congruent/incongruent) x 2 (trait type counter-stereotypic/stereotypic) x 2 (information presented confirming/disconfirming information) design.

Payment to subjects was in the form of a lucky dip where there was a fifty dollar main prize.

2.2 Stimulus materials

Because of the nature of the information to be used in the experiment it was imperative that exhaustive pilot testing be carried out to ensure that the occupational groups used had a range of qualities. This also required that different participants were used at each stage of pilot testing. Participation in all of the pilot studies as well as the main study was voluntary.

In the first pilot study fifteen participants were asked to identify occupations which they believed fitted into the two different categories of stereotyped groups, these groups were positive congruent and positive incongruent which, as described in the introduction, is a group for which the stereotype contains both positive and negative characteristics and to which there is a negative affective reaction. Participants were provided with a description

of both categories of groups and a list of common occupations. They were asked to identify occupations which they thought best fitted with either of the stereotype categories or to write down their own suggestions for occupations if none on the list seemed appropriate.

From this first study the two most commonly selected occupations for each of the stereotype groups were chosen for the next stage of piloting. The groups selected were ambulance medics (selected by 66.67% of participants), S.P.C.A officers (46.67%) for the congruent positive stereotypes and lawyers (40%) and bank managers (46.67%) for positive incongruent stereotypes. All the occupations were chosen from the list provided, no participant provided their own suggestion.

The second phase of pilot testing was designed to identify the traits individuals' generally believed to be especially characteristic or uncharacteristic of the four groups selected from the first pilot study. Fifteen participants were given a list of the four target groups and asked to write down any traits they associated with being characteristic of the groups as well as any traits they associated with being uncharacteristic of the group. For each of the four occupational groups the two strongest or most commonly mentioned characteristic and uncharacteristic traits were identified. The results from this stage of testing are shown in Table One.

For the congruent groups all of the traits considered characteristic of those groups were positive while those that were uncharacteristic were all negative, therefore the congruent groups were seen as completely positive. It is important to note that it was difficult to

Table 1. Traits associated with members of occupational groups

	<u>characteristic</u>	<u>uncharacteristic</u>
Ambulance medics	Brave Highly trained	Lazy Uncaring
S.P.C.A officers	Caring about animals Valuing worthwhile job more than money	Mistreating animals Uncaring
Lawyers	Arrogant More interested in money than people	Honest Limited intelligence
Bank managers	Pessimistic Uncompassionate	Rude Friendly

Table 2. Mean ratings of traits associated with occupational groups

Ambulance medic		
	Brave	7.93
	Highly trained	7.40
	Lazy	2.40
	Uncaring	2.20
S.P.C.A officers		
	Cares about animals	7.93
	Values a worthwhile job more than money	6.20
	Mistreats animals	1.93
	Uncaring	2.00
Lawyers		
	Arrogant	7.60
	Value money more than people	7.07
	Honest	3.60
	Limited intelligence	3.13
Bank managers		
	Pessimistic	7.00
	Uncompassionate	6.80
	Rude	3.53
	Limited intelligence	2.40
	Friendly*	6.40

** replaced with limited intelligence*

identify positive incongruent stereotyped groups. The two groups that were selected did have both positive and negative traits but the proportion of these traits varied. In the case of lawyers that translated into both the characteristic traits being negative and the uncharacteristic trait being one negative and one positive. Therefore although lawyers were strongly rated as a positive incongruent group in the first pilot study, of the four traits most commonly associated (2 stereotypic and 2 counter-stereotypic) with that group three were negative and one was positive giving an overall negative valence. Other positive traits were only weakly associated with the group and it would be misleading to replace one of the negative traits to provide balanced information. For bank managers which was the second incongruent group both of the characteristic traits were negative, both of the uncharacteristic traits were also negative. Therefore the overall valence of beliefs about the group was equally split between positive and negative.

The third stage of testing showed that almost all of the traits derived from the previous study were a strong consensus of societal stereotypes. However one trait was not supported which was that being 'friendly' is uncharacteristic of bank managers. Most respondents rated friendly as being a characteristic of bank managers, contrary to the opinion of the original respondents. Due to this discrepancy 'friendly' was replaced with 'limited intelligence' which occurred one fewer times in the second stage of pilot testing. A subsequent pilot test on this characteristic found it to be supported as being uncharacteristic of bank managers (limited intelligence mean =2.4).

The third stage of pilot testing was included to provide convergent information on the stereotyped and counter stereotyped traits identified above. This study tested whether the traits identified in the previous phase of pilot studies were considered to be representative of those occupations using a different methodology. Fifteen participants were asked to rate, using a nine point scale (1= 'very untrue' and 9= 'very true'), the extent to which they thought each trait was a good description of that occupational group. The mean ratings for each trait are shown in Table Two. A t test conducted between the characteristic and uncharacteristic means ($t(14)=20.94$ $p < 0.0000$) shows that the results were found to be highly significant, that is that the stereotypic traits were seen as more characteristic of the groups than the counter-stereotypic traits (M_s 7.19 vs. 2.62).

The main experiment required a behavioral statement describing each trait. For each characteristic a sentence had to be devised which described a behavior related to the characteristic. It was decided at this stage that for each trait two sentences would be constructed by the experimenter, one that described the trait and one that was the opposite of it, thereby providing one item of confirming information and one of disconfirming. All of these sentences were carried over into the next phase of pilot testing. Since reading times were to be recorded in the main experiment the sentences needed to be of equal length. Each of the sentences included in this pilot study was between 60 and 65 characters in length. Based on the character length the range of words across all sentences was 12-17.

At this point it was imperative to determine whether the sentences created by the experimenter accurately reflected the traits they were derived from. It was crucial to ensure that each sentence would be recognised as relating to the trait it was originally derived from. Ten participants were asked to read each of the sentences and for each one to write down the trait or characteristic they thought was best described by the sentence. The results for this stage of piloting were quite strong. The responses were divided into three categories, the number of times participants wrote down the exact trait, the number of times a synonym occurred and the occurrences of unrelated terms. For all of the traits at least 70 percent of participants wrote down the exact trait or a synonym except for the opposite of 'highly qualified' where only fifty percent wrote the exact trait or a synonym. A full table of results is contained in the appendix (Table 1)

The final pilot test involved participants reading each sentence and rating how well it described the specific trait or its opposite (1= 'very good example of trait' 9 = 'a very good opposite example of opposite trait'). The results from this stage of testing supported the previous phase with each sentence being rated as accurately describing the trait where appropriate and meaning the opposite where appropriate (*Ms* 2.04 vs. 7.71). The mean ratings for all 32 traits are contained in the appendix (Table Two).

Of the 32 sentences only half were actually going to be used in the main experiment. Thirty two sentences had originally been used so that it would give opportunity to use only the strongest traits during the final stage of testing. For each occupation four

sentences were used, one that confirmed a characteristic trait, one that disconfirmed a characteristic trait, one that confirmed an uncharacteristic trait and one that disconfirmed an uncharacteristic trait. The strongest combination of sentences were chosen for the main study, therefore the traits with the weakest results were abandoned leaving those that were the most reliable from the piloting. For example if the opposite example of a stereotypic trait was weak but the example of that trait was strong and for the other stereotypic trait for that group was rated as weak but the opposite was strong the two strongest sentences would be kept for use in the main study. Each sentence that was going to be used in the research was paired with another short sentence that stated which group (occupation) the person belonged and a common male name for the person being described. When these sentences were put together they formed a brief statement which told of one incidence of behaviour for a person belonging to a certain occupational group. Only male names were used so that there would be conformity and so that no gender stereotypes would be activated by the participants which may have influenced their responses.

Below are examples of the sentences used. A full list of all sentences used can be found in the appendix.

Confirmation of a characteristic trait. 'Values money more than people'

Tony is a lawyer.

He decided to save some money by buying his wife a cheap anniversary present.

Disconfirmation of an uncharacteristic trait. 'limited intelligence'

Craig is a lawyer.

He easily scored well above the average in an I.Q. test he took yesterday.

Confirmation of an uncharacteristic trait. 'honest'

Gordon is a lawyer.

He handed in a large sum of money he found, to the police station yesterday.

Disconfirmation of a characteristic trait. 'arrogant'

Ian is a lawyer

He thinks there are plenty other people in the world more talented than him.

At this point it is important to note that for ease of understanding the present research is concerned with the overall effects of confirming or disconfirming a stereotype rather than considering each trait individually. Therefore it is easier to think about the overall effects in terms of the consistency of the information presented with the overall stereotype of the group rather than consider the confirmation and disconfirmation of stereotypic and counter-stereotypic traits. For the congruent groups the stereotype contains only positive beliefs so positive behavioral statements are consistent with the overall stereotype of the group (confirm stereotypic traits and disconfirm counter-stereotypic traits) whilst negative stereotypes are inconsistent with the overall stereotype (disconfirm stereotypic traits and confirm counter-stereotypic). For incongruent groups the picture is more complicated because the stereotype is comprised of both negative and positive beliefs.

Therefore for the positive component of the stereotype the presentation of positive information is consistent with the stereotype and the presentation of negative information disconfirms it. For the negative component of the stereotype, presentation of negative information is consistent with the stereotype and presentation of positive information is consistent with it. It would be possible for the incongruent stereotypes to simply compare the impact of the stereotype-consistent (positive information about positive stereotypic traits and negative information about negative stereotypic traits) and stereotype inconsistent information negative information about positive traits and positive information about negative traits. However as described in the introduction section one advantage of studying incongruent stereotypes is that it enables the investigation of the relative ease in difficulty of changing positive and negative stereotypic beliefs (e.g. Rothbart and John, 1986). Hence in this study the positive and negative components of the incongruent stereotypes were analysed separately.

Participants were required to complete two questionnaires that were identical, other than slight wording differences in the instructions, for both the control and experimental conditions. One questionnaire was concerned with behavioral traits while the other related to affective reactions to the target groups. The behavioral questionnaire asked participants to rate on a nine point scale (1= “not at all” “9= extremely”) how typical they thought each trait was for members of each occupational group in general. The traits used in this questionnaire were the same traits identified in the pilot testing. The affective questionnaire used twelve internal feelings, seven negative traits and five positive traits taken from a list originally devised by Ableson, Kinder, Peters and Fiske (1982).

Participants were asked to rate, on the same nine point scale (1= 'not at all', and 9= 'extremely'), the extent to which each word describes how each group makes them feel (copies of the questionnaires are in the appendix).

The questionnaires were presented in different order for each subject; this was done by preparing four different versions of both the affective and behavioral questionnaire by altering the order of the occupational groups by means of a 4x4 Latin square technique. Then the order of the questionnaires was varied so that half of the participants answered the behavioural questionnaire first and half answered the affective questionnaire first.

2.3 Procedure

Participants volunteered to participate in a study examining individuals perceptions of occupational groups. All participants were told that their participation would involve a computerised task and/or filling out a written questionnaire. All participant were told the study was concerned with attitudes towards occupational groups. Participants were randomly assigned to either the experimental condition or the control condition, with equal proportions of male and female participants in each.

Both the experimental and control conditions were run in an experimental room in the Psychology Department at the University of Canterbury. Both conditions were run in the same room so that the only difference between conditions was the omission of the computer task for the control participants. Each participant completed the tasks

individually with only the experimenter present. Experimental participants were informed that the first part of the experiment was to be conducted on a computer and that at the completion of the computer segment that they would be given two questionnaires to fill out by the experimenter. The computerised portion of the experiment was run on an IBM 486 clone and consisted of three introductory screens and sixteen screens each displaying one pair of sentences as described in the stimulus materials section and a final screen which informed the participants that the experimenter would now provide them with two questionnaires to complete. The first screen informed participants of the nature of the study by informing them that it was designed to examine perceptions of people who work in certain occupational groups and that they would be shown sixteen different sentences which described people who worked in various occupations. Participants were also told that after reading these sentences they would be asked questions concerning them. Participants were also informed at this stage that their participation was completely anonymous. The second screen contained a questionnaire rubric, which informed participants that they could stop their participation and withdraw any information provided to the experimenter at any time. However once they had returned their questionnaires it was understood that they had consented to their data being used in the study. The third screen informed participants that by pressing the space bar it allowed them to proceed to the next screen. Also provided on this screen was a warning to read each sentence carefully as it is not possible to go back and read a sentence again. At the end of this screen participants pushed the space bar and the first statement appeared on screen. Participants had control over the duration of time they spent looking at each statement, after reading each statement the next one was brought on screen by pressing

the space bar. The time each statement was on screen was recorded by the computer. Only one statement could be viewed at time and was presented in the center of the screen. The statements were always displayed in a different random order for each participant with the caveat that no two successive statements could describe members of the same occupation.

After the experimental participants had finished reading the statements they were then presented with two questionnaires to complete. After participants had completed their questionnaires they were fully debriefed as to the true nature of the study. Participants in the control condition followed the same procedure with the omission of the computerised task and were given a printed rubric. (A copy of all instructions the rubric and debriefing sheet given to the experimental subjects are contained in the appendix.)

3.RESULTS

Mean score for all dependent measures are shown in table 3

Table 3.
Mean ratings of affective reactions, behavioral traits and reading times as a function of condition and type of stereotype.

	Control		experimental	
	Congruent	incongruent	congruent	incongruent
Affective Reaction:				
Positive	6.50	2.71	6.04	2.71
Negative	2.18	4.47	2.44	4.50
Behavioral Ratings:				
Positive trait				
Stereotype consistent information	7.34	7.78	7.38	7.09
Positive trait				
Stereotype inconsistent information	8.16	6.41	7.12	6.16
Negative trait				
Stereotype inconsistent information		2.83		3.58
Negative trait				
Stereotype consistent information		3.03		2.53
Reading times:				
Positive trait				
Stereotype consistent information			8.25	9.07
Positive trait				
Stereotype inconsistent information			9.61	9.90
Negative trait				
Stereotype inconsistent information				9.71
Negative trait				
Stereotype consistent information				8.84

3.1 Affective Reaction

Cronbach’s alpha tests of reliability were calculated for the positive (alpha =.70) and negative (alpha = .69) affective traits. Since alpha levels were high mean scores for the positive and negative traits for each target group were calculated for each participant.

Since different predictions were made for the congruent and incongruent stereotypes they were analyzed separately. Each type of stereotype was analysed using a 2

(condition: experimental/control) 2 (valence: positive/negative) analysis of variance with repeated measures on the last factor.

For the congruent stereotypes there was no significant effect for condition but there was a significant main effect for valence $F(1,62)=1000.36, p<0.000$. Ratings were higher on the positive than the negative traits ($M_s= 6.27$ vs 2.31). There was a significant interaction between condition and valence. $F(1,62)=8.1, p<0.006$, which is shown in Figure 1. Post hoc tests (Tukey's HSD $p<0.05$) were conducted to determine whether the differences between the control and experimental participants ratings for the positive and negative traits was significant. There was no difference in

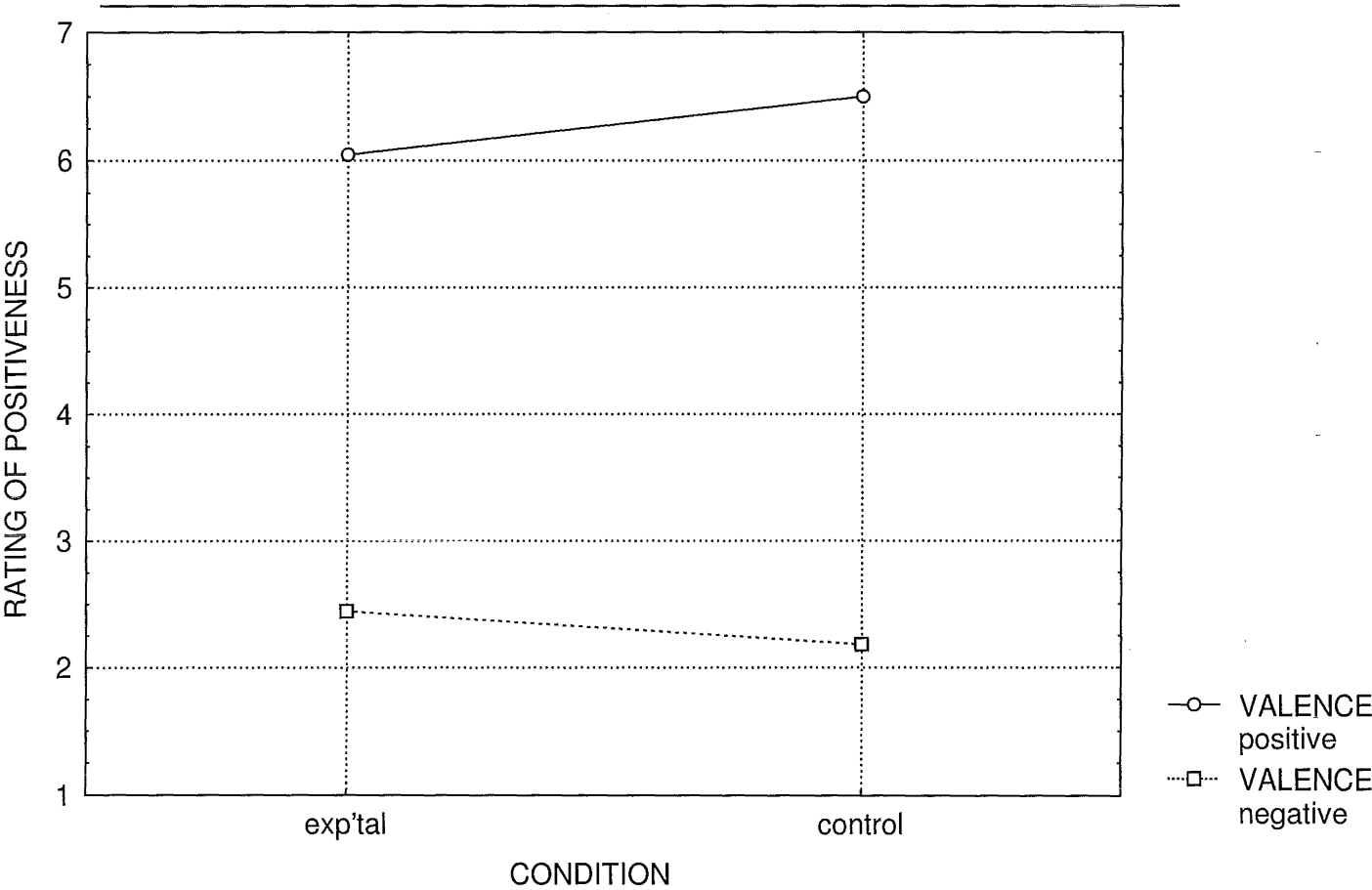


Figure 1. Affective ratings of congruent groups as a function of condition and valence.

ratings between the control and experimental conditions for the negative traits ($M_s=2.18$ vs. 2.44). For the positive traits there was a marginally significant ($p<.06$) effect of condition, with a more positive reaction to the groups in the control than the experimental condition ($M_s = 6.50$ vs. 6.04). There was no difference between control and experimental groups for the negative affect. There was also a significant difference in the rating of affect according to valence for both the control ($M_s= 2.18$ vs. 6.5) and experimental ($M_s= 2.44$ vs. 6.04) groups. Therefore the presentation of negative information has resulted in a reduced positive affective reaction for experimental participants relative to the control participants.

For the incongruent affective stereotypes there was no significant effect of condition. However there was a significant main effect of valence $F(1,62)=97.47, p<0.000$. Ratings were higher for the negative traits than for the positive traits ($M_s = 4.62$ vs. 2.71).

3.2 Behavioral Ratings

For each target group only the four traits originally identified as being stereotypically related to the group in the pilot research were analyzed for evidence of stereotype change. All of the ratings of behavioral traits were scored so that a higher score represented a more positive evaluation of the group; reverse coding was used as appropriate. For example, all of the traits associated with the congruent groups are positive and received high ratings from the control group. For congruent stereotypes the counter-stereotypic traits are negative and were rated as not characteristic of the

group but when reverse coded the ratings demonstrate the overall positive evaluation of the group. Scoring the trait ratings in this manner better reflects the evaluative nature of stereotypic beliefs. For incongruent groups the stereotypes contain a mixture of positive and negative traits so some traits were rated highly by the control groups and other received low ratings.

For clarity it was decided, as described in the method section, to consider the presented behavioral information in terms of its stereotype consistency rather than in terms of the confirmation or disconfirmation of specific stereotypic and counter-stereotypic traits. Therefore the information presented is described in terms of whether it was consistent or inconsistent with the stereotype rather than if a particular stereotypic characteristic was confirmed or disconfirmed. This was especially necessary for the incongruent groups where the stereotypic characteristics of the group were both positive and negative. Considering the behavioral traits in terms of their stereotype consistency gives the following pattern. For the congruent group the stereotype of the groups is entirely positive. The presentation of positive information (either by confirming a stereotypic trait or disconfirming a counter-stereotypic trait) is consistent with the overall stereotype of the group and the presentation of negative information (either disconfirming a stereotypic trait or confirming a counter-stereotypic trait) is inconsistent with the stereotype of the group. This leads to a 2 (condition: control/experimental) x 2 (information presented: stereotype-consistent/stereotype-inconsistent) ANOVA with repeated measures on the second factor analysis for evidence of stereotype change for the congruent groups. For the congruent analysis two new variables were created that comprised of the mean ratings

of all the information presented that was consistent with the stereotype and the mean ratings of all the information presented that was incongruent with the stereotype.

For the incongruent groups the stereotype has both negative and positive characteristics. Positive information presented about the positive characteristics is stereotype-consistent and negative information presented about these characteristics is stereotype-inconsistent. Conversely, positive information presented about the negative characteristics of the stereotype is stereotype-inconsistent and negative information presented about these characteristics is stereotype consistent. Four new variables were created for the incongruent analysis; mean ratings for positive traits about which stereotype consistent information was presented, mean ratings for positive traits about which stereotype inconsistent information was presented, mean ratings for negative traits for which stereotype inconsistent information was presented and mean ratings for negative traits about which stereotype consistent information was provided. This leads to a 2 (condition: control/experimental) x 2 (stereotypic trait type: positive/negative) x 2 (information presented: stereotype-consistent/stereotype-inconsistent) three way ANOVA with repeated measures on the second and third factors analysis for evidence of stereotypic change for the incongruent groups.

An alternative analysis of the behavioral ratings would have been to conduct a 2 (condition: control/experimental) x 2 (trait type: stereotypic/counter-stereotypic) x 2 (information presented: confirming/disconfirming) ANOVA with repeated measures on the second and third factors. Summary tables of these analyses are included in the appendix for interested readers.

For congruent behavioral stereotypes there were main effects of condition, $F(1,62) = 17.28, p < .0001$ and of information presented, $F(1,62) = 5.51, p < 0.02$. These were qualified by a significant interaction between condition and information presented $F(1,62) = 20.24, p < .0000$. This interaction shown in Figure Two. Post hoc tests (Tukey, $p < .05$) revealed no difference between ratings from the control and experimental participants for traits about which stereotype consistent information was presented ($M_s = 7.34$ vs. 7.38). For the traits about which stereotype-inconsistent information was presented, however, there was a significant difference between the control and the experimental participants with those in the experimental condition rating the traits less characteristic of the group than those in the control condition ($M_s = 7.13$ vs. 8.18). That is, there was stereotype change of the positive stereotype in response to the presentation of stereotype inconsistent (negative) information.

The ANOVA for the incongruent groups revealed a significant main effects of trait type, $F(1,62) = 510.06, p < .0000$ and of information presented, $F(1,62) = 24.68, p < .000006$. These were qualified by a significant two way interaction between trait type and information presented $F(1,62) = 5.29, p < .025$. There was also a significant interaction between condition, trait type and information presented $F(1,62) = 7.084, p < .0099$. To analyse this 3-way interaction further separate 2 (condition: control/experimental) \times 2 (information presented: stereotype consistent/stereotype inconsistent) ANOVAs with repeated measure on the second factor were conducted for the positive and negative traits. The ANOVA for positive traits showed a significant main effect of information presented $F(1,62) = 18.69, p < .000057$. Those traits about which stereotype consistent information

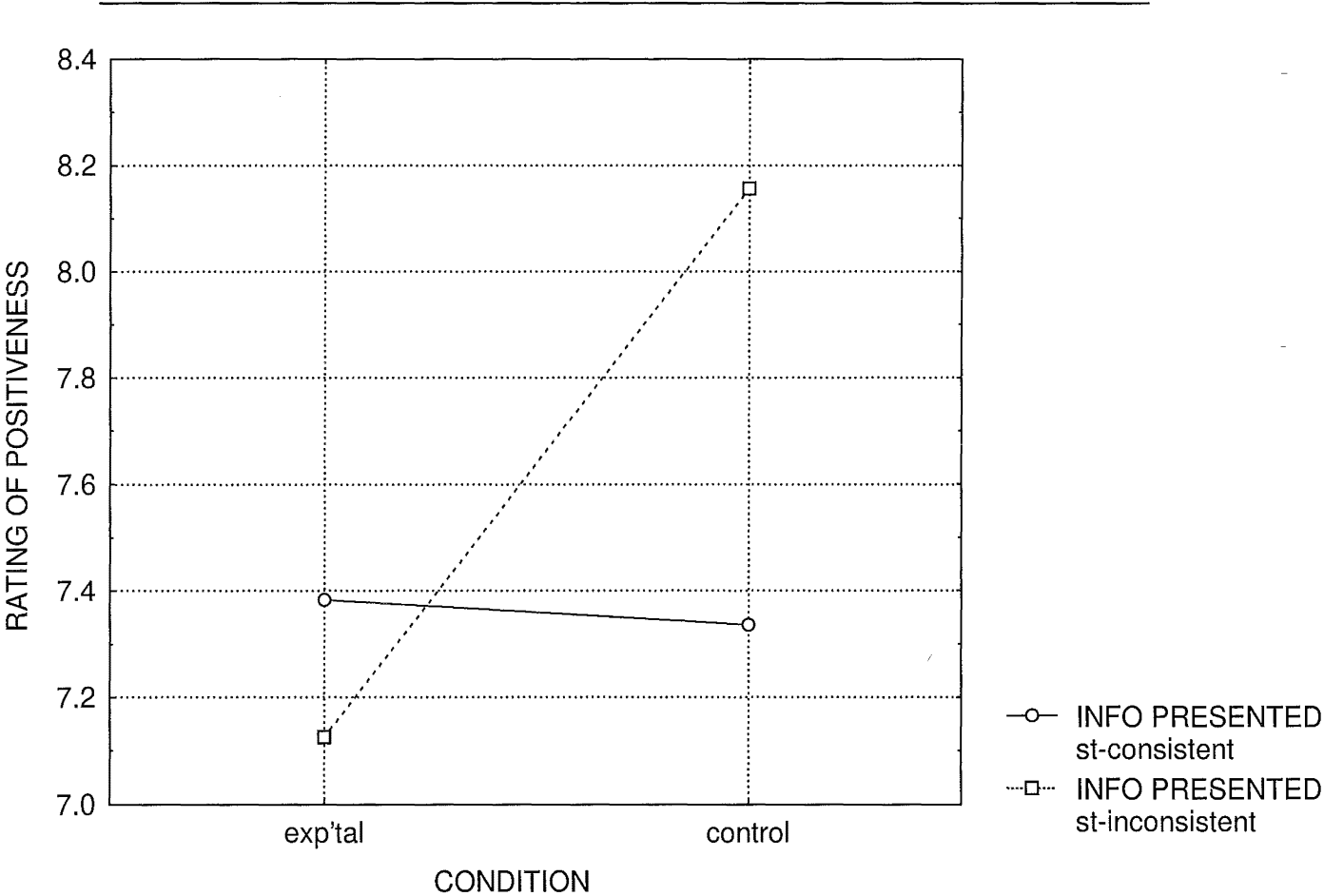


Figure 2. Ratings of behavioral traits for the congruent groups as a function of condition and information presented.

was presented were rated as more characteristic of the group than those about which stereotype inconsistent information was presented across both the control and experimental groups (*Ms* 7.44 vs. 6.28). The ANOVA for negative traits showed a significant main effect of information presented $F(1,62)=6.18, p<.016$, (*Ms* 3.208 vs 2.781). There was also a significant two way interaction between condition and information presented $F(1,62)=13.25, p<.0005$ this interaction is shown in Figure Three. Post hoc tests (Tukey, $p<.05$) revealed that for the negative traits about which stereotype consistent information was presented there was no difference in the ratings given by the control and experimental participants (*Ms* 2.83 vs. 2.53). For the traits about which stereotype inconsistent information was presented, however, there was a

significant difference between the ratings of the control and experimental participants. Participants in the experimental condition rated these traits higher than did participants in the control condition ($M_s = 3.58$ vs. 2.83). That is, participants in the experimental condition rated the group more positively on these traits after the presentation of inconsistent (positive) information. In summary, for incongruent groups when the stereotypic traits are positive there was no impact of the presentation of stereotype inconsistent information. When the stereotypic traits are negative, however, the presentation of stereotype inconsistent information resulted in

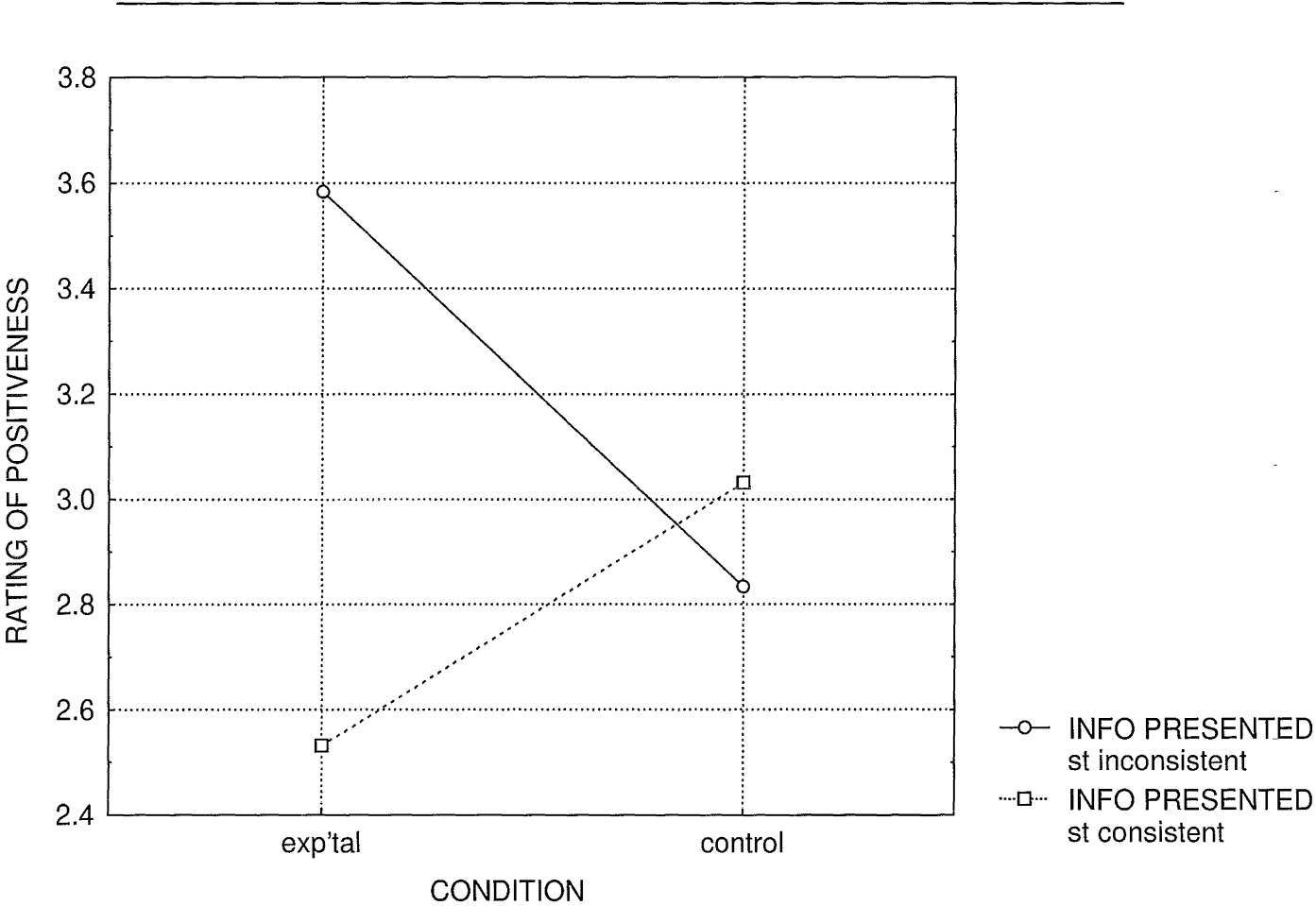


Figure 3. Ratings of negative traits for incongruent groups as a function of condition and information presented.

stereotype change, the groups were rated more positively (negative traits were considered less characteristic of the group) after the presentation of stereotype inconsistent information

3.3 Relationship between behavioral and affective ratings

To investigate whether there was a relationship between the behavioral and affective responses to the groups correlation's were conducted between the behavioral trait ratings and affective reaction scores for the congruent and incongruent groups.

For the congruent groups all the traits, after reverse coding, were positive. For the control condition a mean rating of all the traits for each target group was calculated for each participant and correlated with the positive and negative affective reactions to the groups. This revealed a significant positive correlation for the positive affective reaction $r(31)=.47, p<.05$, and a significant negative correlation for the negative affective reaction, $r(31) = -.43, p<.05$. The more positive the ratings for the behavioral traits the more positively and less negatively the affective reaction to the group was rated. For the experimental participants mean trait ratings were calculated for those traits about which stereotype consistent information was presented and those about which inconsistent information was presented and these means in turn were correlated with the affective reaction means. This set of correlation's yielded no significant effects. After receiving specific behavioral information about members of the target groups there was no relationship between the ratings of the behavioral traits and the affective reactions to the group.

For the incongruent groups some of the traits were negative and some were positive. For the control condition a mean rating of all the positive and all the negative traits for each target group was calculated for each participant and correlated with the positive and negative affective reaction to the groups. This set of correlations yielded no significant results. For the experimental condition mean trait ratings for both positive and negative traits were calculated for those traits about which stereotype consistent information was presented and those about which inconsistent information was presented and these means were in turn correlated with the affective reaction means. This revealed a significant negative correlation between inconsistent information provided about positive traits and negative affective reaction $r(31) = -.35, p < .05$, negative traits about which inconsistent information was provided was correlated with negative affective reaction $r(31) = .39, P < .05$ and positive reaction $r(31) = .39, p < .05$. These correlations show that firstly, the more highly participants rate positive traits as characteristic of a group the lower the negative affect to the group. Secondly the more highly participants rate negative traits as characteristic of a group the higher the negative affect to the group. Thirdly when inconsistent information is given about a negative trait, thereby providing positive information the more highly participants rate that trait of the group the higher the positive affect.

3.4 Reading Times

Reading times for the sixteen presented sentences that were presented to participants in the experimental condition were broken down into two primary categories; those that described the congruent groups and those that described incongruent. This was done because as with the behavioral analyses all the traits associated with two congruent groups are positive whereas the incongruent groups have a mixture of

positive and negative traits. As with the behavioral analyses two separate sets of analysis were conducted for the reading times relating to the congruent groups and those relating to the incongruent groups

For the reading times for sentences relating to the congruent groups a 2 (information presented: stereotype consistent/stereotype inconsistent) within subjects ANOVA was conducted. The ANOVA showed a significant main effect of information presented, $F(1,31)=18.18, p<.0002$. These results show that reading times for stereotype consistent information (positive information) are shorter ($M_s= 8.249$ vs. 9.619 secs) than for stereotype inconsistent information (negative information) about members of positive congruent stereotypes.

The sentences relating to the incongruent groups described positive and negative traits and provided stereotype consistent and stereotype inconsistent information about each type of trait. To analyze this data a 2 (trait type: positive/negative) x 2 (information presented: stereotype consistent/stereotype inconsistent) within subjects ANOVA was used. The analysis revealed a significant two way interaction as shown in figure Four, between trait type and information presented $F(1,31)=5.23, p<.029$. Post-hoc tests (Tukey, $p<.05$) revealed that faster reading times for both positive and negative traits, reading times were not significant.

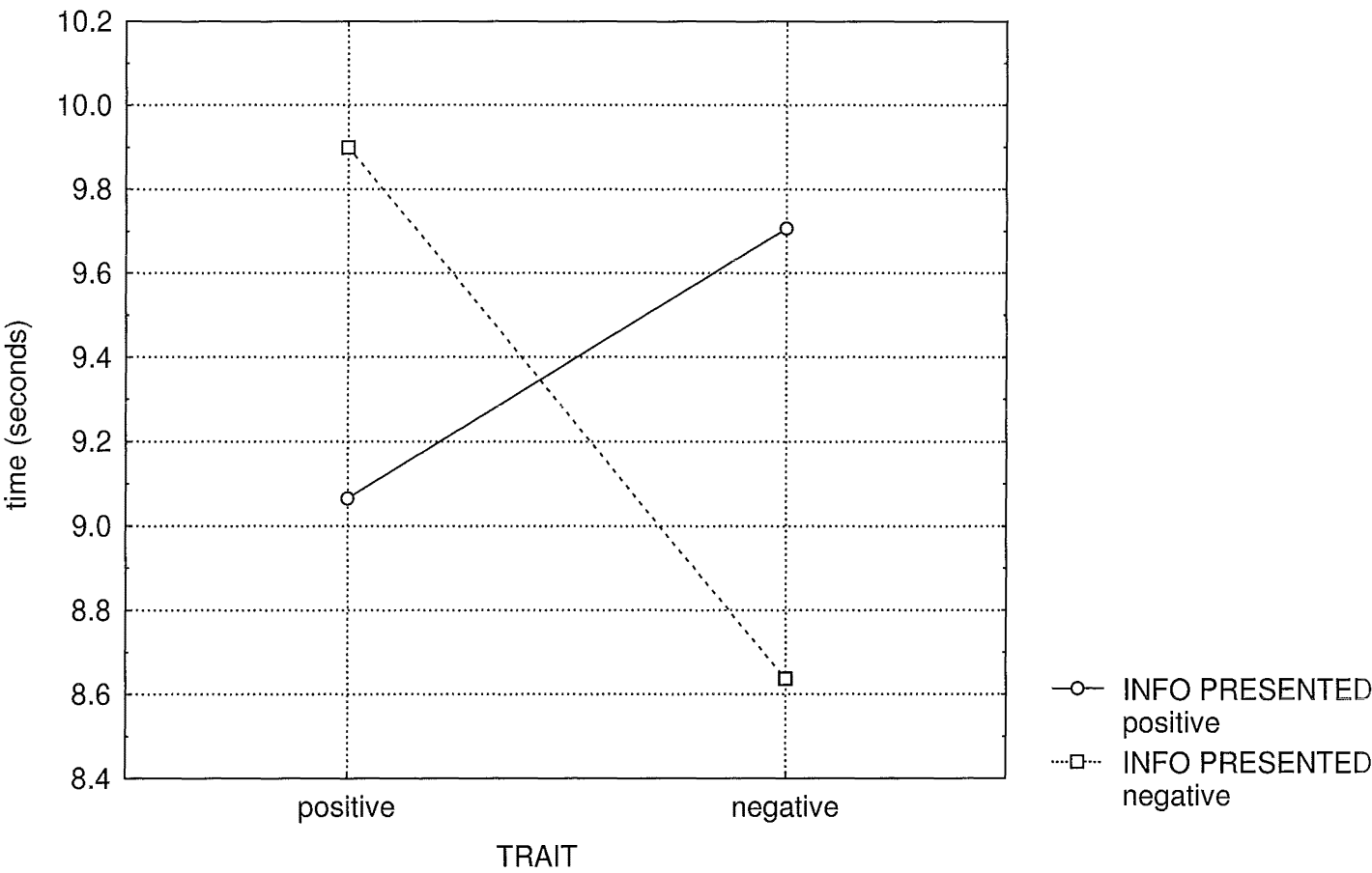


Figure 4. Reading times for information presented about incongruent groups as a function of trait type and information presented.

3.5 Relationship between reading times and behavioral trait ratings

To examine whether reading times for stereotype consistent and inconsistent information were related to ratings of the groups and the traits described in the sentences read correlation's between mean reading times and trait ratings were conducted. Separate sets of correlations for the congruent and incongruent groups. For the congruent groups' correlation were carried out between reading times for consistent sentences and consistent traits and between the inconsistent sentences and the inconsistent traits. For the incongruent groups correlation were carried out between positive consistent traits and consistent sentences, the positive inconsistent traits and inconsistent sentences, the negative consistent traits and consistent

sentences and the negative inconsistent traits and inconsistent sentences. No significant correlation's were found.

4. Discussion.

It was the intention of this study to show; firstly that behavioral information can be used to modify affective reactions as well as behavioral beliefs. Secondly to provide support and further the work on the confirmability and disconfirmability of traits carried out by Rothbart and John (1986) by using positive and mixed positive/negative stereotypes. Thirdly to replicate the findings of Brewer et al. (1981) and Johnston and Hewstone (1992) that reading times are longer for stereotypic inconsistent information than stereotype consistent information and to investigate whether reading time effects stereotype modification. Finally the present research was conducted to test whether positive and negative affective reactions differ in their susceptibility to change.

4.1 Stereotype change

The results from the present research showed that behavioral information can modify stereotypes as has been demonstrated many times in the literature with negative stereotypes (e.g. Hewstone, Johnston & Aird, 1994; Hewstone, Macrae, Griffiths, Brown & Milne, 1994; Johnston and Hewstone, 1992; Johnston, Hewstone, Pendry & Frankish, 1994; Kunda & Oleson, 1995, 1997 and Weber and Croker 1983). The present research also showed stereotype change to occur for both positive and mixed valence stereotypes whereas previous research has demonstrated change only with negative stereotypes. For congruent groups the presentation of inconsistent (negative) behavioral information caused the experimental participants to rate stereotypic traits as less characteristic of group members and hence the groups were perceived less positively overall. However the same effect for positive traits was not shown for

incongruent stereotypes, when inconsistent (negative) information was presented about a positive stereotypic trait it did not cause participants to rate that trait as any less characteristic of the group. However when stereotype inconsistent information was provided about negative traits it did cause the experimental participants to rate them as less characteristic of the group than control participants and hence the group was seen as more positive overall. The only effects, across all groups, were on the ratings of the traits about which stereotype-inconsistent information had been presented; there was no impact of stereotype consistent information. Stereotype confirming information had a plateau effect where as it was merely confirming participant's stereotypes, it did not lead to any change across conditions, this finding is consistent with past research such as Johnston and Hewstone (1992)

The results for the congruent groups were as predicted, and were consistent with past research with negative groups. However the incongruent groups offered some surprises. Any changes within the stereotype were predicted to be consistent with Rothbart and Park's (1986) findings that negative traits would be hard to lose and positive traits easy to lose, hence any modification of the negative stereotypic traits was expected to be minor relative to that of the positive stereotypic traits. Although Rothbart and Park's study was published 13 years ago there has been no research that has tested whether the results they found for individual traits would transfer to stereotypes. This lack of research is probably because it was generally accepted that their results would be transferable. However the results from the present study show a different pattern of results to those expected. The results from the present research is the complete opposite of those predicted; change in negative stereotypes is however consistent with past research on change in negative stereotypes (e.g. Hewstone, et al.,

1994; Hewstone, et al., 1994; Johnston and Hewstone, 1992; Johnston, et al., 1994; Kunda & Oleson, 1995, 1997 and Weber & Croker 1983). The lack of change in the positive component of incongruent stereotypes is surprising and is in contrast with the results for the congruent groups where the positive stereotype was responsive to change. The reasons for these unexpected findings are not clear but it is possible that because the traits are contained in a stereotype rather than as individual traits the perceiver considers the properties of the groups as a whole. In other words instead of considering the effects of the inconsistent information just on the trait it is describing, the effects on the stereotype as a whole are taken into account. Therefore because the mixed stereotypes contained negative traits plus a negative affect they were almost negative stereotypes which contained a 'pocket' of positive information.

The reason for inconsistent information having no effects on the positive traits is unclear. It might have been predicted that it would be easier to change the positive information because by doing so it would make the whole stereotype negative and hence congruent. Because the positive information was not modified by the inconsistent information it may indicate a strong desire on the individuals part to keep that part of the stereotype intact. One possible reason for the resistance of the positive traits to change could come from the ideas generated by research on the phenomenon of modern racism (McConahay, 1983). There is a prevalent social norm against the use of stereotypes, probably because they are commonly seen as containing negative characteristics and causing and sustaining prejudice. Stereotypes are seen to generate negativity towards out-groups so by acknowledging and maintaining a positive component of a mixed stereotype individuals can appear egalitarian whilst at the same time are able to maintain negative beliefs about a target group. Therefore it gives the

individual the advantage of be able to keep their negative views without having to accept any form of social punishment such as ridicule or being socially ostracized

The results for the congruent groups show that just as when positive disconfirming information is given to an individual to dilute a completely negative stereotype the same can be done, if necessary, to modify a completely positive stereotype. It shows that positive stereotypes are susceptible to change. The implication of these findings could be potentially very important to future research on both positive and negative stereotypes. Positive stereotypes that have negative consequences (e.g. Cash and Trimer, 1984) should be able to modified relatively easily. However, that is not to say that positive stereotypes should be altered to make them more negative but it should possible to modify a stereotype, such as those associated with attractiveness, to make it more balanced and realistic without trying to associate negative characteristics with attractive people to do so. The other possibly more important implication of positive stereotypes being relatively easy to change is that because of that reason the attempts to modify negative stereotypes may only have short lived results. Negative stereotypes, because of their obvious negative social consequences, are often the subject of research which tries to find ways to modify them. As mentioned previously, negative stereotypes can be hard to change, but research has shown that under the right conditions change can occur. The problem maybe that after modifying a negative stereotype to make it more positive over time it may be converted back to a negative stereotype as the perceiver begins to collect evidence that supports their old negative stereotype again. The issue of stereotype change longevity awaits further research. One study which has considered the persistence of stereotype change for negative groups (Johnston et al., 1994) showed a persistence effect but that may have

resulted partly from the experimental set-up where the follow-up questions were asked in the same setting by the same experimenter.

4.2 Affective reactions

As mentioned above behavioral information was expected to have an effect on the stereotypic traits, however the other important question was how much effect would the behavioral information have on the affective reaction of participants to the target groups. It was predicted that for the congruent groups disconfirming behavioral information would have an effect on the affective reaction towards those groups. For the incongruent groups it was predicted that because of the inconsistency of the disconfirming evidence the affective reaction would be hard to change. The results showed that for congruent stereotypes the affective reaction did become more negative after the presentation of behaviorally disconfirming information, although the effect was marginal. There was a group effect of the affective reaction being rated more negatively by the experimental participants. On the basis of that trend it would appear likely that behavioral information could have an effect on a congruent affective reaction. The control group showed significant correlations between the behavioral ratings and affective reactions, the more positively the traits were rated the more positive and less negative the affective reaction to the group was, which is consistent with there being a link between the affective reaction and the trait ratings. The lack of correlations for the experimental group may show that this relationship is not a matter of degree but was more of an all or none type relationship where any amount change in trait ratings resulted in some change in affective ratings. It is also

possible that because the correlation were based on ratings of only two behavioral traits each and by only 32 participants that the effects are not very stable.

For the incongruent groups it was predicted that the affective reaction would not be effected to the same extent as for the congruent groups because the inconsistent information was of mixed valence, some is inconsistent with the affective reaction and some is consistent with it. For the congruent groups all the inconsistent information was blatantly disconfirming the affective reaction. However for the incongruent groups the stereotype is mixed and the inconsistent information is therefore also mixed so the disconfirmation is not so blatant, hence the lack of effect is understandable. As predicted there was no significant difference between control and experimental participants' affective reaction towards the groups, they were in fact almost identical which may show that experimental participants did not consider their affective reaction was being challenged. On the basis of these results it seems likely that behavioral information can effect congruent affective reactions, however more research will still have to be conducted.

The present research suggests that it is easier to modify an affective reaction which is congruent with the stereotype of a group than an affective reaction that is incongruent with the stereotype. The mixed stereotypes were used in the present research because an incongruent group in which the stereotype was positive but the affective reaction to the group was negative proved impossible to identify. It would be very unlikely that an individual would have a completely negative stereotype of a group yet retain a positive reaction towards them, similarly a totally positive stereotype with a negative

reaction would be unusual. Having a mixed stereotype appears to insulate the affective reaction from change.

It is possible that the differential effects shown by the affective reactions in the present study may be due to their valence rather than to their congruence or incongruence with the stereotype. If the differences in the responses of the affective reactions to change are because they are positive and negative then it appears easier to disconfirm a positive than a negative affective reaction. In the present research congruence and valence of affective reaction were confounded and in order to differentiate between these two explanations for change in the affective reaction these factors must be unconfounded. To do so groups which have a negative stereotype and negative affective reaction and/or groups with a mixed stereotype and positive affective reaction need to be considered. More research will have to be conducted to help find an answer as to which is the dominant factor in bringing about change in the affective reaction, whether it is valence or congruence is not clear although the present study suggest congruence. Possible solutions to this question are offered in the future research section.

The affective reaction to a group is in a sense the individuals true or 'gut' feeling, it is the first instinct we have about a group. This reaction may effect how the individual interacts with members of that group. If an individual's affective reaction towards a group is negative in most cases social norms will prevent the individual from being openly hostile but their negative feelings may still make themselves apparent in subtle ways or even subconsciously through negative bodily language. This negative reaction may in turn be picked up by the person with whom they are interacting which

may cause them to react in a negative manner towards the perceiver allowing them to find justification for their negative reaction without realising they have actually caused the other persons negative behavior.

4.3 Reading times

The current research recorded the amount of time that participants spent on reading each sentence that was presented to them, this was done in an attempt to determine whether participants would have longer reading times for stereotype inconsistent information and then to correlate those reading times to changes in the behavioral stereotype. The results showed that participants spent significantly longer periods of time reading information that was inconsistent with a stereotypic trait compared to information that was consistent with a stereotypic trait regardless of whether the trait was positive or negative. This finding supports research by Brewer et al., (1981) and Johnston and Hewstone (1992). Johnston and Hewstone showed longer reading times for participants reading about inconsistent individuals only under conditions where there was stereotype change (i.e., dispersed conditions). The present study also used dispersed information so it is likely that participants longer reading times were reflective of attempts to integrate the inconsistent information into beliefs about the group (i.e., stereotype change) However the present research also attempted to determine if longer reading times were correlated with stereotype change. No link between reading times and participant's ratings of the groups could be found for the behavioral traits, as all of the correlation's were not significant. On the basis of these findings it only speculation due to the similarities with Johnston and Hewstone (1992) that the increased reading times lead to any stereotype change and obviously this area still requires further research.

4.4 Limitations and directions for further research

An area that is lacking in stereotype research is the effects that stereotype modification has on stereotypes with both positive and negative traits. The present research has touched on this area and produced results that were not expected, future research could look at the effects of stereotypes change on stereotypes with different levels of positive and negative traits as well as positive and negative behavioral and affective components. It is possible that mixed stereotypes have different properties to the negative stereotypes that have been traditionally studied and as such warrant further attention.

Another area that is potentially very important to further stereotype research is the affective reaction. Although it is not actually part of the stereotype itself it is the first reaction when the individual comes into contact with a member of a stereotyped group. The affective reaction tells the individual how they feel towards the group. And because of that it can set the tone for the rest of the interaction. If upon meeting a person who is associated with a stereotyped group the individuals affective reaction is negative it may bias the decisions and interpretations of behavior made about that person for the duration of the interaction. Therefore if a negative affective reaction is held towards a group it could serve to reinforce a negative stereotype. As shown with incongruent stereotypes it is possible for individuals to hold two opinions that are seemingly in contrast with each other towards the same group. Therefore if it is possible to have a affective stereotype that is in contrast to the behavioral stereotype it would also be possible to have an affective reaction that is in contrast to the stereotype. The implication of this is that if a negative stereotype is modified to make

it more positive or balanced it could be undone by a negative reaction that has gone unchallenged through the process of modification and has remained negative. The importance of the affective reaction should not be underestimated as it may be one of the many factors that determine the effectiveness of any attempted modification of social stereotypes. Trying to modify the affective reaction may be a particularly difficult process as the present research has shown that even with a congruent reaction it is difficult to alter and that an incongruent reaction is harder still. An avenue of possible future research would be to approach affective reactions in the opposite manner to that used in the present research. Therefore rather than altering the stereotype and seeing what effect that has on the affective reaction it may be better to attempt to change the affective reaction directly and see what effect that has on the stereotype.

Affective information has only recently been focused on in terms of its effects on stereotypes and how it biases interaction. Asuncion and Mackie (1996) had very limited success in trying to modify affective stereotype and the present research has also had limited success with the affective reaction. This field of affect in stereotypes is currently wide open. The present research did not try to test the effect that affective information would have on the affective reaction and that seems an obvious and logical step for further research.

The present research was carried out in part to provide more knowledge about congruent and incongruent stereotypes. While it is relatively easy to find a 'pure' congruent stereotype such as the positive stereotypes with positive affect reactions used in the current research it is difficult to find the same for incongruent stereotypes, for example positive stereotype and negative affective reaction, as was described in

the method section. Therefore because the incongruent stereotypes used in the in the present research are mixed stereotypes they are in effect incongruent within the stereotype as well as incongruent with the affective reaction. Because of this it makes the differences within the congruent and incongruent groups difficult to assess because the differences within them found in this study could be attributable to the content of the stereotypes as well as the congruence or incongruence with the affective reaction. However it may be difficult, if not impossible to find a purely positive stereotype with a negative reaction and as such a direct comparison will always be difficult to make being confident that any differences are not due to other factors.

A possible avenue for future research would be to include another congruent group, which has negative stereotype and a negative affective reaction. If the effect is one of congruence versus incongruence then a negative congruent group should show modification of their affective reaction in response to disconfirming behavioral information. If the effect is one of positive versus negative reactions then the negative congruent group should show little or no change in affective reaction in response to disconfirming information.

A possible weakness in the present research is that the list of affective reactions used in the questionnaire was taken from a study by Ableson et al., (1982). They were used because they were considered to be reliable as feelings that other groups can cause the individual to feel when encountering the group. However the problem with using such a list is that it may not have been specific enough for the groups used in this study. It may have been worth doing another stage of pilot testing to compile a list that was

reliably related to the groups used in the present research. Participants could have been asked to rate their reaction to the groups and certain affective traits and then from this specific traits associated with the groups could be identified.

4.5 Conclusion

In conclusion the present research has shown some important results. Firstly the present research showed stereotype change in response to the presentation of inconsistent information for both positive and mixed valence stereotypes. Within the mixed stereotypes, however, the results demonstrated that the positive component of the stereotype was more resistant to change than the negative component. Secondly it was found that the affective reaction that is incongruent with a stereotype is more resistant to change than an affective reaction that is congruent with the stereotype. This results is important because it provides information about a currently under researched area given that the affective reaction can influence social interaction. Finally, it was shown that reading are longer when participants are reading stereotype inconsistent information which is consistent with the suggestion that longer reading times lead to stereotype change.

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Appendix.

Table 1. Participants ratings of how accurately sentences describe their trait.

Described the trait				Described opposite of the trait			
	Exw	syn	nr		exw	syn	nr
Highly qualified	1	6	3	Highly qualified	0	5	4*
Lazy	7	2	1,	Lazy	0	7	3
Caring	4	4	2	Caring	0	8	2
Brave	5	3	2	Brave	0	7	3
Uncaring	3	4	3	Uncaring	4	3	3
Cares about animals	0	7	3	Cares about animals	0	7	3
Values job more than money	0	7	3	Values job more than money	0	7	3
Mistreats animals	1	6	3	Mistreats animals	0	9	1
Money not people	0	8	2	Money not people	0	9	1
Honest	9	1	0	Honest	10	0	0
Limited intelligence	0	9	1	Limited intelligence	4	6	0
Arrogant	1	9	0	Arrogant	0	10	0
Pessimistic	2	8	0	Pessimistic	2	8	0
Uncompassionate	0	8	2	Uncompassionate	1	9	0
Rude	3	7	0	Rude	0	10	0
Limited intelligence	0	10	0	Limited intelligence	0	9	1

* participant failed to respond

Syn=synonym exw=exact word nr=not recognised

Table 2. mean ratings of how accurately sentences reflect their trait.

	Mean for example	mean for opposite example
Lazy	1	7.8
Brave	2.2	8.2
Uncaring	2.3	7.9
Highly qualified	2	6.6
Value an important job		
more than money	2.2	7.2
Mistreats animals	1.9	8.8
More interested in		
money than people	2.1	6.9
Honest	1	8.7
Limited intelligence	2.1	7.9
Limited intelligence	2.7	7.3
Arrogant	1.9	7.4
Pessimistic	2.4	7.0
Uncompassionate	2.2	6.7
Rude	1.8	8
Cares about animals	2.4	8.8
Uncaring	2.4	8.2

Affective questionnaire

This questionnaire asks about your feelings towards the groups that you have read about. Below you will find a list of words describing internal feelings. Please rate the extent to which each word describes how each group makes you feel. The better the word describes how you feel, the higher the number you should circle. **Please answer all questions honestly. There are no right or wrong answers to any of the questions and your answers are completely anonymous.**

Ambulance medics

	Not at all	extremely
Afraid	1---2---3---4---5---6---7---8---9	
Angry	1---2---3---4---5---6---7---8---9	
Disgusted	1---2---3---4---5---6---7---8---9	
Disliking	1---2---3---4---5---6---7---8---9	
Frustrated	1---2---3---4---5---6---7---8---9	
Sad	1---2---3---4---5---6---7---8---9	
Uneasy	1---2---3---4---5---6---7---8---9	
Happy	1---2---3---4---5---6---7---8---9	
Hopeful	1---2---3---4---5---6---7---8---9	
Liking	1---2---3---4---5---6---7---8---9	
Proud	1---2---3---4---5---6---7---8---9	
Sympathetic	1---2---3---4---5---6---7---8---9	

Lawyers

	Not at all	extremely
Afraid	1---2---3---4---5---6---7---8---9	
Angry	1---2---3---4---5---6---7---8---9	
Disgusted	1---2---3---4---5---6---7---8---9	
Disliking	1---2---3---4---5---6---7---8---9	
Frustrated	1---2---3---4---5---6---7---8---9	
Sad	1---2---3---4---5---6---7---8---9	
Uneasy	1---2---3---4---5---6---7---8---9	
Happy	1---2---3---4---5---6---7---8---9	
Hopeful	1---2---3---4---5---6---7---8---9	
Liking	1---2---3---4---5---6---7---8---9	
Proud	1---2---3---4---5---6---7---8---9	
Sympathetic	1---2---3---4---5---6---7---8---9	

Bank managers

	Not at all	extremely
Afraid	1---2---3---4---5---6---7---8---9	
Angry	1---2---3---4---5---6---7---8---9	
Disgusted	1---2---3---4---5---6---7---8---9	
Disliking	1---2---3---4---5---6---7---8---9	
Frustrated	1---2---3---4---5---6---7---8---9	
Sad	1---2---3---4---5---6---7---8---9	
Uneasy	1---2---3---4---5---6---7---8---9	
Happy	1---2---3---4---5---6---7---8---9	
Hopeful	1---2---3---4---5---6---7---8---9	

Liking	1---2---3---4---5---6---7---8---9
Proud	1---2---3---4---5---6---7---8---9
Sympathetic	1---2---3---4---5---6---7---8---9

S.P.C.A officers

	Not at all	extremely
Afraid	1---2---3---4---5---6---7---8---9	
Angry	1---2---3---4---5---6---7---8---9	
Disgusted	1---2---3---4---5---6---7---8---9	
Disliking	1---2---3---4---5---6---7---8---9	
Frustrated	1---2---3---4---5---6---7---8---9	
Sad	1---2---3---4---5---6---7---8---9	
Uneasy	1---2---3---4---5---6---7---8---9	
Happy	1---2---3---4---5---6---7---8---9	
Hopeful	1---2---3---4---5---6---7---8---9	
Liking	1---2---3---4---5---6---7---8---9	
Proud	1---2---3---4---5---6---7---8---9	
Sympathetic	1---2---3---4---5---6---7---8---9	

Alternative instructions for control participants

This questionnaire is designed to examine your feelings towards certain occupational groups. . Below you will find a list of words describing internal feelings. Please rate the extent to which each word describes how each group makes you feel.

The better the word describes how you feel, the higher the number you should circle.

Please answer all questions honestly. There are no right or wrong answers to any of the questions and your answers are completely anonymous

Behavioral Questionnaire

This questionnaire asks you about the characteristics of the groups that you have read about. Below you will find a list of words describing common characteristics. Please rate the extent to which you believe each characteristic describes members of each group. The more a characteristic describes members of a group the higher the number you should circle. **Please answer all questions honestly. There are no right or wrong answers to any of the questions and your answers are completely anonymous.**

Ambulance medics

	Not at all	extremely
Lazy	1---2---3---4---5---6---7---8---9	
Brave	1---2---3---4---5---6---7---8---9	
Uncaring	1---2---3---4---5---6---7---8---9	
Highly qualified	1---2---3---4---5---6---7---8---9	
Value an important job more than money	1---2---3---4---5---6---7---8---9	
Mistreats animals	1---2---3---4---5---6---7---8---9	
More interested in money than people	1---2---3---4---5---6---7---8---9	
Honest	1---2---3---4---5---6---7---8---9	
Limited intelligence	1---2---3---4---5---6---7---8---9	
Arrogant	1---2---3---4---5---6---7---8---9	
Pessimistic	1---2---3---4---5---6---7---8---9	
Uncompassionate	1---2---3---4---5---6---7---8---9	
Rude	1---2---3---4---5---6---7---8---9	
Cares about animals	1---2---3---4---5---6---7---8---9	

Lawyers

	Not at all	extremely
Lazy	1---2---3---4---5---6---7---8---9	
Brave	1---2---3---4---5---6---7---8---9	
Uncaring	1---2---3---4---5---6---7---8---9	
Highly qualified	1---2---3---4---5---6---7---8---9	
Value an important job more than money	1---2---3---4---5---6---7---8---9	
Mistreats animals	1---2---3---4---5---6---7---8---9	
More interested in money than people	1---2---3---4---5---6---7---8---9	
Honest	1---2---3---4---5---6---7---8---9	
Limited intelligence	1---2---3---4---5---6---7---8---9	
Arrogant	1---2---3---4---5---6---7---8---9	
Pessimistic	1---2---3---4---5---6---7---8---9	
Uncompassionate	1---2---3---4---5---6---7---8---9	
Rude	1---2---3---4---5---6---7---8---9	
Cares about animals	1---2---3---4---5---6---7---8---9	

Bank managers

	Not at all	extremely
Lazy	1---2---3---4---5---6---7---8---9	

Brave	1---2---3---4---5---6---7---8---9
Uncaring	1---2---3---4---5---6---7---8---9
Highly qualified	1---2---3---4---5---6---7---8---9
Value an important job more than money	1---2---3---4---5---6---7---8---9
Mistreats animals	1---2---3---4---5---6---7---8---9
More interested in money than people	1---2---3---4---5---6---7---8---9
Honest	1---2---3---4---5---6---7---8---9
Limited intelligence	1---2---3---4---5---6---7---8---9
Arrogant	1---2---3---4---5---6---7---8---9
Pessimistic	1---2---3---4---5---6---7---8---9
Uncompassionate	1---2---3---4---5---6---7---8---9
Rude	1---2---3---4---5---6---7---8---9
Cares about animals	1---2---3---4---5---6---7---8---9

S.P.C.A officers

	Not at all	extremely
Lazy	1---2---3---4---5---6---7---8---9	
Brave	1---2---3---4---5---6---7---8---9	
Uncaring	1---2---3---4---5---6---7---8---9	
Highly qualified	1---2---3---4---5---6---7---8---9	
Value an important job more than money	1---2---3---4---5---6---7---8---9	
Mistreats animals	1---2---3---4---5---6---7---8---9	
More interested in money than people	1---2---3---4---5---6---7---8---9	
Honest	1---2---3---4---5---6---7---8---9	
Limited intelligence	1---2---3---4---5---6---7---8---9	
Arrogant	1---2---3---4---5---6---7---8---9	
Pessimistic	1---2---3---4---5---6---7---8---9	
Uncompassionate	1---2---3---4---5---6---7---8---9	
Rude	1---2---3---4---5---6---7---8---	
Cares about animals	1---2---3---4---5---6---7---8---9	

Alternative instructions for control participant

This questionnaire is designed to examine your opinion of certain occupational groups. Below you will find a list of words describing common characteristics. Please rate the extent to which you believe each characteristic describes members of each group. The more a characteristic describes members of a group the higher the number you should circle. **Please answer all questions honestly. There are no right or wrong answers to any of the questions and your answers are completely anonymous.**

Rubric given to participants

QUESTIONNAIRE

Perceptions of occupational groups

NOTE: You are invited to participate in the research project 'perceptions of occupational groups' by completing the following questionnaire. The aim of this project is to investigate the perceptions individuals hold of different occupational groups. The questionnaire is anonymous, and you will not be identified as an informant without your consent. You may at any time withdraw your participation, including withdrawal of any information you have provided. By completing the questionnaire, however, it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

Debriefing document for participants

I would now like to thank you for your participation and to provide you with some information concerning the nature of this study. The questionnaires that you have filled out are actually designed to examine your social stereotypes and their resistance to disconfirming behavioural information. Some of the information which you received about the occupational groups was stereotype disconfirming and was designed to weaken your stereotypes of those groups and to determine which types of stereotypes are more resistant or susceptible to change. You were not told about the exact nature of the study until you had completed the questionnaires as it may have influenced your answers. You may still withdraw any information provided to me if you object to the deception or the true nature of this study.

Instructions given to experimental subjects before reading the sentences**PERCEPTIONS OF OCCUPATIONAL GROUPS**

This study is designed to examine perceptions of people who work in certain occupations. In the first part of the study you will be shown 16 short statements on the computer screen, each one describes a single action of an individual from a certain occupational group. After reading all the statements carefully you will be asked to answer some questions based on what you have read.

Please remember that all your responses in this study are anonymous, so please give your true opinions. There are no right or wrong answers to any questions.

PRESS THE SPACE BAR TO CONTINUE

Before you begin this study I must inform you that you have been invited to participate in the research project 'perceptions of occupational groups'. The aim of this research is to investigate the perceptions that individuals hold of different occupational groups.

The questionnaire which you will be asked to complete at the end of the study is anonymous, and you will not be identified as an informant. You may at any time while reading the statements or completing the questionnaire withdraw your information. By completing the questionnaire and returning it to me it will be understood that you have consented to participate in the project, and that you consent to publication of the results with the understanding that anonymity will be preserved.

PRESS THE SPACE BAR TO CONTINUE

Each time you press the space bar a new two sentence statement will appear on the screen. Please read each sentence carefully, as once you have pressed the space bar you can not go back to read a sentence again. Each statement will stay on the screen until you press the space bar. After you have finished reading a statement press the space bar, and the next statement will appear. Please read each statement carefully. After you have read all the statements you will be asked some questions about the information you received .

When you press the space bar now a new screen with the first of the statements will appear.

PRESS THE SPACE BAR TO BEGIN.

List of sentences given to experimental participants

Todd is an ambulance medic

He has just completed the highest level training course for delivering CPR.

John is an ambulance medic.

He can not be bothered getting up to change the channel on his television.

Hank is an ambulance medic

He was much too frightened to go on a high speed rollercoaster in the weekend.

Sean is an ambulance medic

He moved in with his elderly grandmother so he could look after her better.

Oscar is an S.P.C.A officer

He makes time to visit his sick mother every day to make sure she is all right.

Larry is an S.P.C.A officer.

He deliberately ran over a kitten playing on the road in his car yesterday.

Terry is an S.P.C.A officer.

He gave up his previous highly paid job because it gave him no satisfaction.

Owen is an S.P.C.A officer.

He repeatedly kicked and punched his own dog last night for no reason at all.

Tony is a lawyer.

He decided to save some money by buying his wife a cheap anniversary present.

Craig is a lawyer.

He easily scored well above the average in an I.Q. test he took yesterday.

Gordon is a lawyer.
He handed in a large sum of money he found, to the police station yesterday.

Ian is lawyer
He thinks there are plenty other people in the world more talented than him.

Allan is a bank manager.
He thinks his team will win tomorrow despite losing all their other matches.

Josh is a bank manager.
He would not swerve to avoid a group of ducklings crossing the road yesterday.

Mike is a bank manager
He always remembers to stand for everybody who comes into or leaves his office.

Darren is a bank manager
He can not grasp complex concepts and ideas and needs them explained simply.

ata file: NICK.STA [64 cases with 222 variables]

VARIABLES:
.91: BCSC -9999 MEAN Variable 176-177 congruent stereotype confirmed
.92: BCSD -9999 MEAN Variable 178-179 congruent stereotype disconfirmed
.93: BCCSC -9999 MEAN Variable 180-181 congruent counter stereotype confirmed
.94: BCCSD -9999 MEAN Variable 182-183 congruent counter stereotype disconfirme
1: COND -9999

INDEPENDENT VARIABLES (between-groups factors):

COND Number of Levels: 2 Codes: level 1: 1-exp'tal
level 2: 2-control

DESIGN: 3 - way ANOVA , fixed effects
DEPENDENT: 1 variable (Repeated Measure)
BETWEEN: 1-COND (2): exp'tal control
WITHIN: 2-ST/CST(2) x 3-CON/DIS(2)

DESIGN: 3 - way ANOVA , fixed effects
DEPENDENT: 1 variable (Repeated Measure)
BETWEEN: 1-COND (2): exp'tal control
WITHIN: 2-ST/CST(2) x 3-CON/DIS(2)

STAT. GENERAL MANOVA	Summary of all Effects; design: (nick.sta) 1-COND, 2-ST/CST, 3-CON/DIS					
Effect	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1	.016	62	.775391	.020	.887576
2	1*	1600.000*	62*	.897114*	1783.496*	0.000000*
3	1*	5.063*	62*	.918788*	5.510*	.022116*
12	1*	15.504*	62*	.897114*	17.282*	.000101*
13	1*	18.598*	62*	.918788*	20.242*	.000031*
23	1*	5.941*	62*	.748677*	7.936*	.006493*
123	1	.016	62	.748677	.021	.885602

data file: NICK.STA [64 cases with 222 variables]

VARIABLES:
195: BISC -9999 MEAN Variable 184-185 incongruent stereotype confirmed
196: BISD -9999 MEAN Variable 186-187 incongruent stereotype disconfirmed
197: BICSC -9999 MEAN Variable 188-189 incongruent counter stereotype confrimed
198: BICSD -9999 MEAN Variable 190-191 incongruent counter stereotype disconfir
1: COND -9999

INDEPENDENT VARIABLES (between-groups factors):

COND Number of Levels: 2 Codes: level 1: 1-exp'tal
level 2: 2-control

DESIGN: 3 - way ANOVA , fixed effects
DEPENDENT: 1 variable (Repeated Measure)
BETWEEN: 1-COND (2): exp'tal control
WITHIN: 2-ST/CST(2) x 3-CON/DIS(2)

DESIGN: 3 - way ANOVA , fixed effects
DEPENDENT: 1 variable (Repeated Measure)
BETWEEN: 1-COND (2): exp'tal control
WITHIN: 2-ST/CST(2) x 3-CON/DIS(2)

STAT. GENERAL MANOVA	Summary of all Effects; design: (nick.sta) 1-COND, 2-ST/CST, 3-CON/DIS					
Effect	df Effect	MS Effect	df Error	MS Error	F	p-level
1	1*	5.348*	62*	1.222215*	4.3754*	.040564*
2	1*	1020.004*	62*	1.505733*	677.4134*	0.000000*
3	1*	9.766*	62*	1.330834*	7.3380*	.008716*
12	1*	8.266*	62*	1.505733*	5.4894*	.022355*
13	1*	18.598*	62*	1.330834*	13.9744*	.000406*
23	1	.316	62	1.072518	.2950	.588974
123	1	.063	62	1.072518	.0583	.810041